

Shiawasseee NWR - Narrative Report -
1969

WATERFOWL

REFUGE SHIAWASSEE

MONTHS OF SEPTEMBER TO DECEMBER, 19 69

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter									53	
Geese:										
Canada	1,100	1,950	3,500	7,800	11,300	15,700	24,500	25,000	26,700	31,000
Cackling										
Brant										
White-fronted										1
Snow				1	1	2	80	2,000	500	1,000
Blue						4	320	5,000	2,000	5,000
Other										
Ducks:										
Mallard	9,100	14,300	23,600	26,200	32,400	33,000	34,500	42,000	56,000	76,000
Black	2,200	3,000	3,200	3,600	4,000	5,500	5,500	6,000	6,000	8,000
Gadwall										
Baldpate	200	200	300	300	300	200	100	200	200	100
Pintail		50	100	300	200	200	200	200	100	100
Green-winged teal	100	400	550	700	500	300	200	100	100	
Blue-winged teal	600	700	700	700	300	200				
Cinnamon teal										
Shoveler	50	100	100	100	100	50				
Wood	600	600	600	600	600	600	400	400	400	300
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	300	200	200	200	200	200	200	200	300	200

3-1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)REFUGE SHIAWASSEE REFUGEMONTHS OF SEPTEMBER TO DECEMBER, 19 69

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11	12	13	14	15	16	17	18		
<u>Swans:</u>										
Whistling									371	
Trumpeter										
<u>Geese:</u>										
Canada	31,000	26,100	13,400	12,000	8,600	4,300	1,400	5	1,717,485	
Cackling										
Brant										
White-fronted	1								14	
Snow	1,000	500	100	100					36,988	
Blue	5,000	3,500	900	500					155,568	
Other										
<u>Ducks:</u>										
Mallard	80,000	62,000	40,000	20,000	8,000	3,000	600	50	3,925,250	
Black	8,000	5,000	5,000	3,000	700	500	100		485,100	
Gadwall										
Baldpate									14,700	
Pintail									10,150	
Green-winged teal									20,650	
Blue-winged teal									22,400	
Cinnamon teal										
Shoveler									3,500	
Wood									35,700	
Redhead										
Ring-necked										
Canvasback										
Scaup		50							350	
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coots:</u>	100	10							16,170	
					(over)					

(CASE)

	(5)	(6)	(7)	SUMMARY
	Total Days Use :	Peak Number :	Total Production :	
Swans	371	53		Principal feeding areas <u>Refuge croplands</u>
Geese	1,910,055	37,000		
Ducks	4,517,800	88,000		Principal nesting areas
Coots	16,170	300		
				Reported by <u>Refuge Personnel</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge SHIAWASSEE REFUGEMonths of SEPTEMBER to DECEMBER 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Pied-billed Grebe			20	Sept.	1	Oct 30				20
Great Blue Heron			50	Sept.	11	Dec 5				50
Green Heron			20	Sept.	1	Oct.				20
Common Egret			16	Sept.	4	Nov 17				16
American Bittern			20	Sept.		Oct.				20
Black-cr. Night Heron			40	Sept.		Sept.				40
Sora Rail			10	Sept.		Sept.				10
Common Gallinule			20	Sept.	2	Oct 30				20
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer			50	Sept.		Nov.				50
Yellowlegs			30	Sept.		Sept.				30
Ring-billed Gull			200	Dec.	Still present					200
Herring Gull			50	Dec.	Still present					50

(over)

(048L)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove		300	Sept.	Still present	300
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl	Resident Species	20	Dec.		20
Magpie		500	Dec.		500
Raven		30	Sept.		30
Crow		200	Sept.	8 Dec 7	200
Bald Eagle	Winter Resident	2			2
Marsh Hawk		20	Sept.	1 Dec 14	20
Red-tailed Hawk		20	Sept.	1 Dec 29	20
Am. Rough-legged Hawk	1 Nov 14	4	Dec.	Winter resident	4
Turkey Vulture		30	Sept.	2 Oct.	30
Sparrow Hawk		30	Sept.	Still present	30
Reported by..... Refuge Personnel					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge SHIAWASSEE REFUGE

Year 1969

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/1-7	301	1,538	39 Canada geese	39		39	301	39
10/8-14	213	1,024	15 Canada geese	15		15	213	15
10/15-21	255	1,224	23 Canada geese	23		23	255	23
10/22-28	219	1,040	10 Blue geese, 4 snow geese, 3 Canada geese	17		17	219	17
10/29-11/4	220	1,169	3 Canada geese, 1 blue goose	4		4	220	4
11/5-11	221	1,207	6 Canada geese, 4 blue geese, 1 snow goose	11		11	221	11
11/12-14	32	175	11 Blue geese, 4 Canada geese	15		15	32	15
TOTALS:	1,461	7,377	93 Canada geese, 26 Blue geese, and 5 Snow geese	124		124	1,461	124

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge SHIAWASSEE REFUGE (BLINDS OPERATED BY MICH. DEPT. OF NATURAL RESOURCES)

Year 1969

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/1-7	62	206	15 Canada geese	15	1	16	62	16
10/8-14	32	75	17 Canada geese	17	2	19	32	19
10/15-21	36	115	3 Canada geese	3	1	4	36	4
10/22-28	24	88	4 Canada geese, 2 Blue geese	6	2	8	24	8
10/29-11/4	14	39	3 Canada geese	3		3	14	3
11/5-11	18	60	0	0		0	18	0
11/12-14	4	12	2 Canada geese	2		2	4	2
TOTALS:	190	595	44 Canada geese, 2 Blue geese	46	6	52	190	52

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge SHIAWASSEE REFUGE Months of SEPTEMBER to DECEMBER, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Croplands, bottom- land hardwoods & marsh - 8,000 ac.	800	0	0					10	Only rarely observed.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753

Form NR-3

(June 1945)

BIG GAME

Refuge SHIAWASSEE REFUGECalendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	Bottomland hardwoods, croplands, marsh - 8,000 ac.	300	205						10			1,000	500	1:4

Remarks: Estimated removals by hunting include 80 taken during firearms season, 75 during archery season, and an estimated 50 illegal and/or unretrieved kills.

Reported by Refuge Personnel

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge SHIAWASSEE REFUGE

Year 19 69

Botulism

Period of outbreak NONE

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
---------------------	---------------	-------------

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease Lead Poisoning

Species affected Whistling Swan

Number Affected Species	Actual Count	Estimated
<u>Whistling Swan</u>	_____	<u>20</u>
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost estimated 20

Source of infection Presumed on wintering area.

Water conditions _____

Food conditions _____

Remarks Each year a small loss of swans is recorded during the spring migration. It is presumed the lead is ingested on the wintering area and birds weaken and die enroute to the nesting grounds.

3-1757
Form NR-7
'Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Shiawassee

Year 1969

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
							Farm Unit 11B	10 lbs per acre	¹ 50 acres	Bromegrass, tall fescue, ryegrass mixture	Nov.		
							Pool 3 Dikes	10 lbs per acre	² 35 acres	Bromegrass, tall fescue, ryegrass & ladino clover mixture	June	80%	Drought

- (1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Remarks: 1. Seeding of retired croplands to permanent grass.
2. Seeding newly constructed dike for erosion control

Total acreage planted:

Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge SHIAWASSEE REFUGE

County SAGINAW

State MICHIGAN

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Field Corn	322	31,139	21	1,840	133	11,478	476	Ryegrass in corn	193
White Beans	909	25,538	-	-	-	-	909	Clover w/ sm. grains	488
Soybeans	337	10,386	-	-	17	438	354	Wheat/Rye/Oats Browse	419
Barley	37	1,150	-	-	322	14,490	359	Winter Wheat	152
Winter Wheat	72	3,816	-	-	57	3,021	129		
Oats/Alfalfa	20	30 tons	-	-	10	600	30		
Buckwheat	-	-	-	-	116	5,800	116		
Millet	-	-	-	-	147	7,400	147		
Sugar Beets	173	3,469 tons	-	-	13	199 tons	186		
								Fallow Ag. Land (not farmed because of wet conditions)	271

No. of Permittees: Agricultural Operations 17 Haying Operations 0 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,978
Hay - Wild				2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge SHIAWASSEE REFUGE

Months of May through December, 19569

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Corn	1,250	1,840	3,090	900	-	850	1,750	1,340	-	1,000	340

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge secondary headquarters granary.

(10) Remarks surplus for transfer to Seney Refuge.

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

3-1761

Form NR-11

(2/46)

TIMBER REMOVAL

Refuge SHIAWASSEE REFUGE Year 1956

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
None during year								

Total acreage cut over.....

Total income.....

No. of units removed B. F.

Method of slash disposal.....

Cords.....

Ties.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

Refuge

SHIAWASSEE

ANNUAL REPORT OF PERSTICIDE APPLICATION

Proposal Number

Reporting Year

1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 19 to July 3	Willow, Cotton- wood, Canada thistle, Nettles, Poison ivy	All dikes, road ditches, drainage ditches and ditch banks, Nature trail	36	2,4-D / 2,4,5-T mixture	70 lbs.	2 lbs/acre (a.i.)	Water 6 pts. chemical per 125 gals.	Tractor- powered broadjet sprayer.

10. Summary of results (continue on reverse side, if necessary) 80% kill of woody species with 10% regrowth; 90% top kill on broad-leaf species with 50% regrowth; 100% kill on nettles and poison ivy with no regrowth.

Shiawassee National Wildlife Refuge

Lake St. Clair Closed Area
Wyandotte National Wildlife Refuge
Michigan Islands National Wildlife Refuge

United States Department of the Interior

Fish and Wildlife Service

Bureau of Sport Fisheries and Wildlife

Saginaw, Michigan

Shiawassee National Wildlife Refuge

Annual Narrative Report

1969

Personnel

John R. Frye	-	Refuge Manager
David I. Hoff	-	Asst. Refuge Manager (Term. 11/7/69)
S. Sam Poma	-	Refuge Clerk
Louis D. Robinson	-	Biological Technician
Lawrence J. Blazo	-	Operator General (Heavy)
Kenneth H. Shelley	-	Operator General (Light)

Temporary Personnel

Danny M. Willis	-	Laborer
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United States Department of the Interior

Fish and Wildlife Service

Bureau of Sport Fisheries and Wildlife

Shiawassee National Wildlife Refuge

6975 Mower Road

Saginaw, Michigan 48601

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I. GENERAL

A. Weather Conditions - 1969

	Month	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>Normal</u>	<u>Snowfall</u>		
January	1.52	1.11	15.10	46	-6
February	.25	1.76	2.40	43	6
March	.73	1.28	5.9	68	7
April	1.62	3.35	-	79	25
May	3.51	3.08	-	95	33
June	3.41	3.89	-	94	40
July	3.83	3.56	-	93	50
August	.83	2.74	-	94	44
September	1.29	2.39	-	92	36
October	3.42	3.54	-	81	21
November	2.26	3.93	10.0	59	8
December	1.07	1.75	6.2	48	-2
Annual Totals	<u>23.74</u>	<u>32.38</u>	<u>40.6</u>	Extremes <u>95</u>	<u>-6</u>

During the first ten days of the year temperatures remained near the zero mark and 13 inches of snow fell. High winds made conditions miserable and most roads were blocked by drifting snow on January 8 and 9. Thawing temperatures and rain, with alternate periods of sub-freezing temperatures, were common during the remainder of the month and by the first of February, only a trace of snow remained.

February and March were mild. Above normal temperatures prevailed with precipitation well below normal. The last appreciable amount of snow was received the last week of March. Both temperatures and precipitation were near normal during the spring months, but the summer was hot and dry. August and September were almost the driest on record. There were 29 days without measureable precipitation during August, and September was nearly as dry.

Fall months produced normal weather conditions. The first killing frost occurred on October 8 and the first snow fell on October 22. Winter arrived with four inches of snow and a low temperature of 5° on November 20. Cold temperatures and additional snowfall continued through the end of the year. The first general freeze-up occurred on December 3 and all pools and rivers have remained frozen over since that date. In 1969 we were spared the usual December ice and sleet storms that occurred in 1967 and 1968. The year ended with three inches of snow on the ground.

B. Habitat Conditions.

1. Water. Steady rains with thawing snow during the last week of January caused rises in all rivers with first flooding on January 30. Flooding from the Spaulding Drain and the Ferguson Bayou inundated all lands east of the diked Crop Unit 1, including the Pool 3 area, on February 2. At this time flood crest peaked at about elevation 587.00 with waters just starting to flow across the Pool 1B spillway. All river levels dropped rapidly and by February 4, were back to normal elevation.

Water levels in rivers and pools remained at normal levels during March and most of April. Pumping from private lands caused flooding of woods and croplands in the southeast corner of the refuge during late March.

Strong northeast winds, heavy rains, and wind tides caused flooding of Pool 2 over the east dike April 18 to 22, and continued pumping from private lands kept the southeast part of the refuge flooded. Continued heavy rains during the first week of May raised rivers again with major flooding of the refuge starting May 9. On the 10th the north and east dikes of Pool 2 were again overtopped and flood waters entered Pool 1 through the south spillway. By May 11 the Pool 1 low level dike was under water and the north dike of Pool 1A was washed out. About this time the dike along the east side of Farm Unit 2C gave way flooding most of the east side of the refuge, and the Eastwood Drain flooded remaining refuge lands west of Crop Unit 1. At this time the entire refuge was flooded, except approximately 1,200 acres in Farm Units 1A, 1B, 1C, 2D, and 5.

By the first week of June most flood waters had been removed from the major croplands acreage but Farm Units 3A, 3B, and 4 were not dry enough for commencement of farming operations until June 23. The illegal plug in the Eastwood Drain was removed on July 14 and the woods area in the southeast corner of the refuge finally was dry by July 20.

Minimal flood damage repairs were completed during July. The Pool 2 dikes were patched and pumping started on July 5. At this time Pool 1A was dry because of the dike washout, but Pool 1B was near approved elevation because flood waters had been retained in the pool.

There is no pump for Pool 1 since the old and obsolete pump acquired with the land, broke down in September of 1968. Funds have not been available to replace it to date. This, plus lack of money to repair the holes in Pool 1A dikes, resulted in poor water conditions all during the summer and fall in Pool 1A. This pool was dry, or nearly so, all year, raising and falling with river levels. Water levels were maintained near approved elevations in Pools 1B and 2 however.

River marshes were in excellent condition all during the summer and fall months, reflecting the higher levels of Lake Huron and Saginaw Bay, and furnished several hundred acres of additional waterfowl habitat.

In general, 1969 can be characterized as too much followed by too little water. The entire refuge will again be extremely vulnerable to flooding in 1970 as much flood damage from previous years has gone unrepaired because of money limitations.

2. Food and Cover.

Again in 1969 food and cover conditions were generally excellent for all wildlife species. Spring migrants found an abundance of readily available food in flooded refuge croplands, especially in corn fields of Crop Unit 1 where the refuge share of the 1968 crop had been knocked down during the winter months. For the second year, lands east of the Spaulding Drain flooded and proved attractive to ducks and geese, spreading the spring waterfowl concentrations over a larger portion of the refuge acreage. Major flooding of refuge pools limited the availability of natural foods, and use of the marshes by the migrants was limited.

The low water conditions in Pool 1A, with many acres of exposed mud flats, provided the stimulus for abundant growth of smartweed and wild millet.

The refuge goose flock, with the years production of goslings, again fed heavily on farm crops in Crop Unit 1 during the summer months, causing a complete loss of approximately ten acres of navy beans in Farm Unit 1A, and lesser damage in Farm Unit 1B. Through the cooperative farming program there were 133 acres of corn, 17 acres of soybeans, 322 acres of barley, 57 acres of wheat, 116 acres of buckwheat, 147 acres of millet and 13 acres of sugar beets left in the field for wildlife as the refuge share of crop produced. An additional 517 acres was seeded to wheat, oats or rye in late summer to furnish browse for the geese. Most of these crops were utilized by waterfowl during the late summer and fall, except the corn which was left standing and will be knocked down during the winter to provide food for spring migrants. Despite the abundance of available foods, feeding flights out of the refuge by ducks and geese were commonly observed late in the season.

Canada geese again fed extensively, and exclusively, on sugar beets during October and November, then moved to corn and winter wheat in late November and December after the first hard freeze. There were no complaints of goose depredations on winter wheat this year, even though wheat on private lands was heavily used by geese in early December.

II. WILDLIFE

A. Migratory Birds.

1. Whistling Swans. The first spring migrants were observed on March 6 with the arrival of two swans. Fifteen were present on March 9 and following major waterfowl movements of March 19-22, the peak spring population of 6,000 was reached on March 24. Major areas of use by the swans were again in flooded fields in Crop Unit 1, but heavy use was also noted in other areas of the refuge as the season progressed. The major feeding was on flooded fields with corn and millet, and limited use was made of the pools and the rivers.

As the season progressed, swans started leaving this area about April 5 and most were gone by April 18. A few swans were observed late in May, with the last observations of a single swan on May 26.

The fall migration was normal in that few swans were observed. The first observation was on October 25 and large over-flights were observed on October 27 and 28, and again on November 14 and 15. There were 53 swans using the Pool 1 area between October 30 and November 5.

2. Geese. There were 2,000 Canada geese on the refuge at the beginning of the year but all left for warmer climates during the first week of January when zero temperatures occurred just ahead of the first major storm of the year. Each winter reports are received of small flocks of geese from local observers. We suspect a few geese might winter on the Tittabawassee River which is so polluted by Dow Chemical Company that it does not freeze.

The first spring migrants, 76 Canada geese, returned to the refuge on February 28, about one week earlier than normal. Movements continued that day and there were 800 geese using the Shiawassee River on March 1. The migration progressed at a rapid pace with 1,700 geese censused on March 8, 3,000 on March 9, and then peaked at 30,000 following the major movement of March 19-22. This peak held for almost a month until a major exodus occurred on April 19 and 20, and by April 25 only the nesting flock of 1,000+ Canada geese remained.

Blue geese and Snow geese were first observed on March 21 and last seen the second week of April. The peak population was only 3 Blues and 3 Snows. There were no reported observations of White-Fronted geese during the spring migration.

First pre-nesting activity by the nesting flock was observed the second week of March on islands in Pool 1. Peak nesting activity occurred the last week of March. The peak nesting activity was

evident during the time the peak spring goose populations occurred. The migrants tended to concentrate loafing activity on islands in Pool 1, and it is suspected that this resulted in considerable strife between nesting pairs and loafing migrants, which may be a major limiting factor in goose production at this refuge.

The annual goose nesting survey was completed on March 30 and April 1, at which time 46 active nests were located, as compared to 55 active nests in 1968. Twenty of the nests were in Pool 1A, 23 were located in Pool 1B, and 3 were in Pool 2. The 46 nests contained 247 eggs, an average of 5.4 eggs per nest. Goose nests were located mainly on nesting islands as shown by the following tabulation.

TABLE I

Locations of Goose Nests - 1969

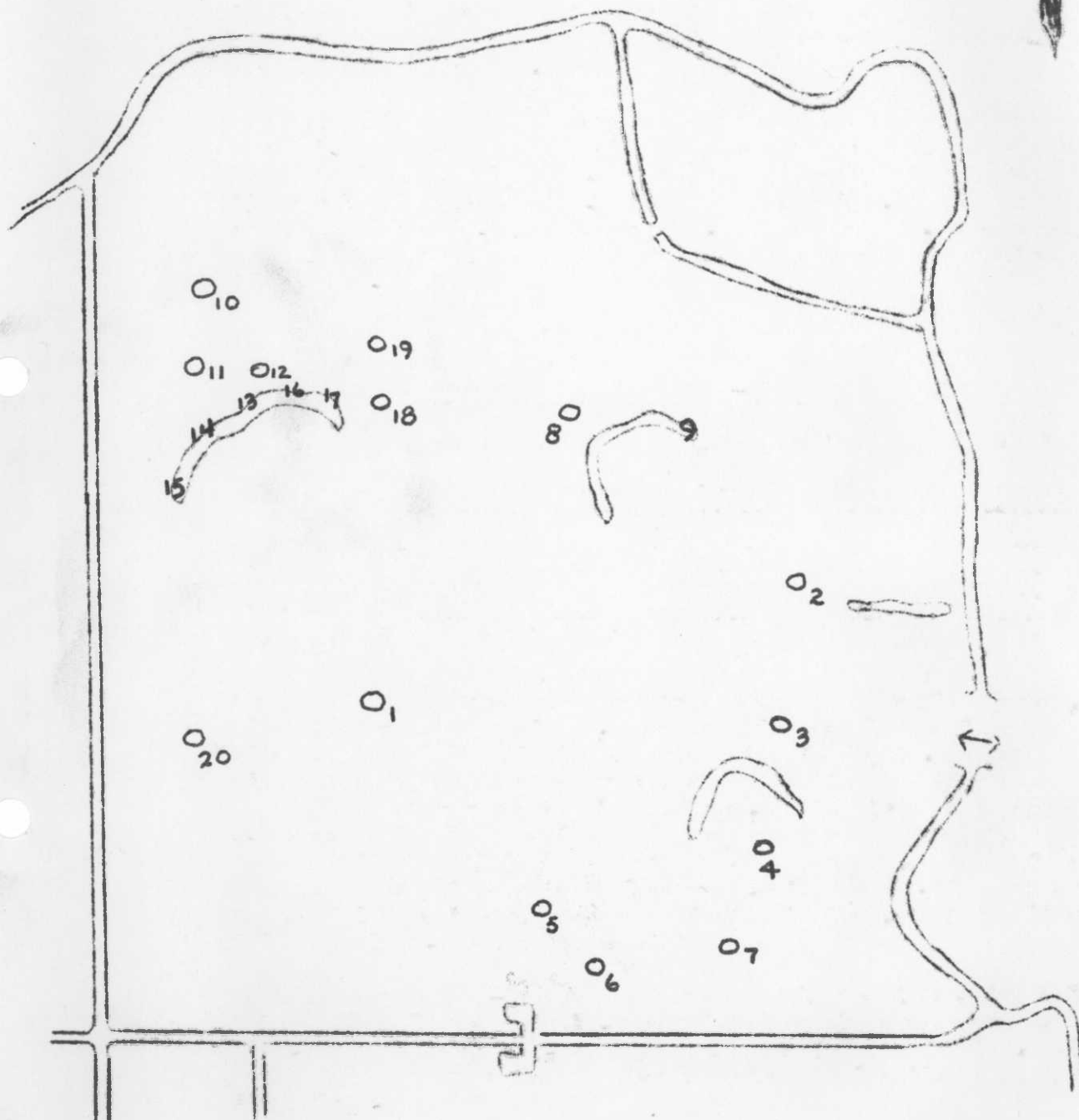
	Islands (78%)	Nest Tubs (4%)	Muskrat House (11%)	Other (7%)	Total (100%)
Pool 1A	18			2	20
Pool 1B	18	2	2	1	23
Pool 2			3		3
Totals:	36	2	5	3	46

The first goose broods were observed on May 7 when five broods, with a total of 22 goslings, were seen in Pool 1A and in the ditches along the east side of Farm Units 1A and 1B. Major flooding of the refuge occurred on May 10 with most of the nesting islands overtopped by flood waters. This flooding apparently occurred at the time most nests were almost ready for hatching and effectively eliminated about 60% of the nests. On May 29 a goose brood count found only 15 broods. 1969 production was down to about 100 goslings as compared to 267 in 1968, as a result of this May flood.

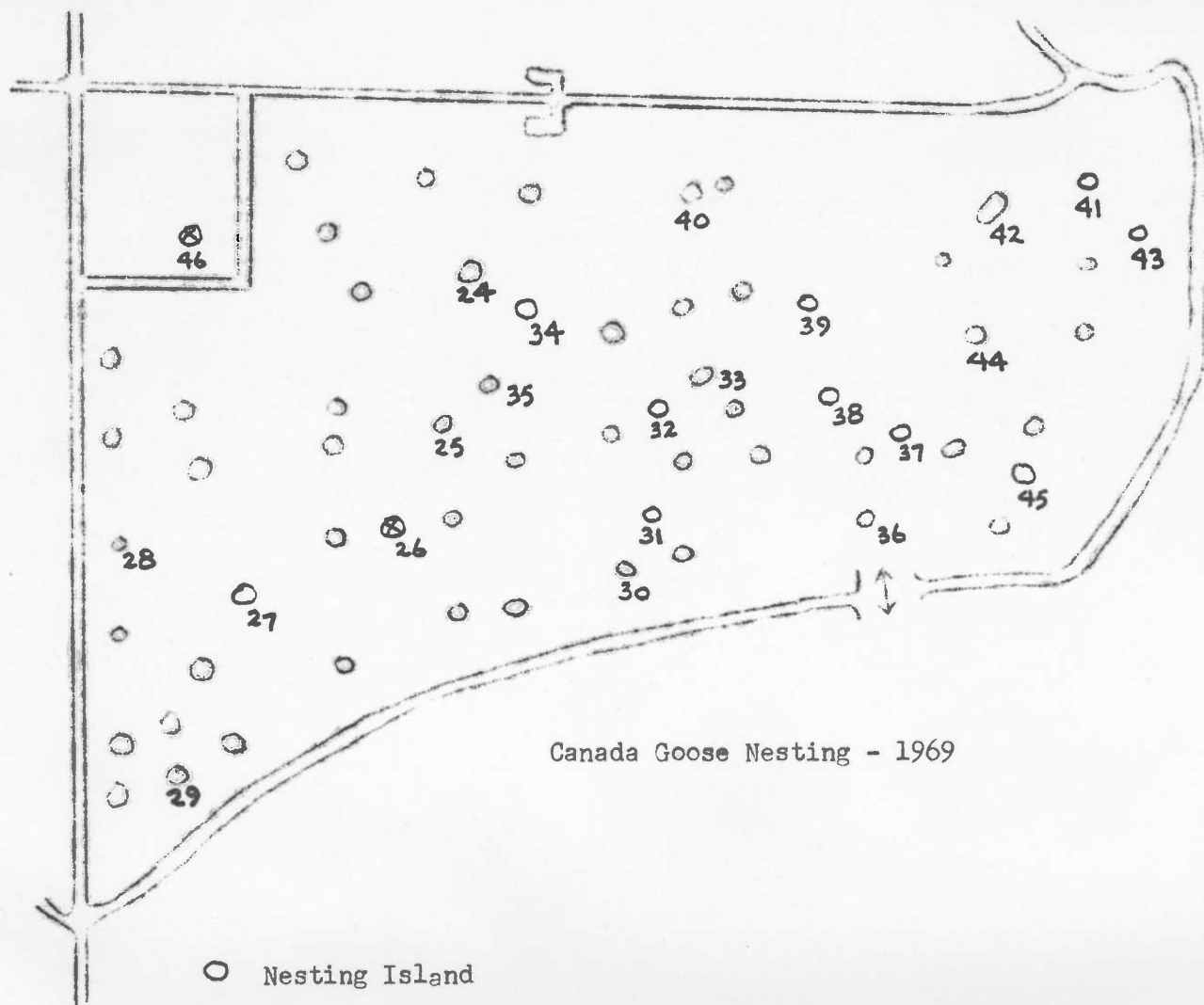
Goslings were drive-trapped in Farm Units 1A and 1B and in Pool 1 between June 27 and July 16, and a total of 67 were banded at this time. Of the 67 banded, 29 were males and 38 were females. All goslings were marked with yellow leg bands to identify them as 1969 birds.

The first fall migrants were observed on September 11. Additional movements between September 25 and October 10 raised the refuge population to 24,500 Canada geese and 400 Blue and Snow geese. A massive flight of geese occurred on October 18 and 19. The refuge goose population had swelled to 31,000 Canadas and 7,000 Blues and

Canada Goose Nesting - 1969



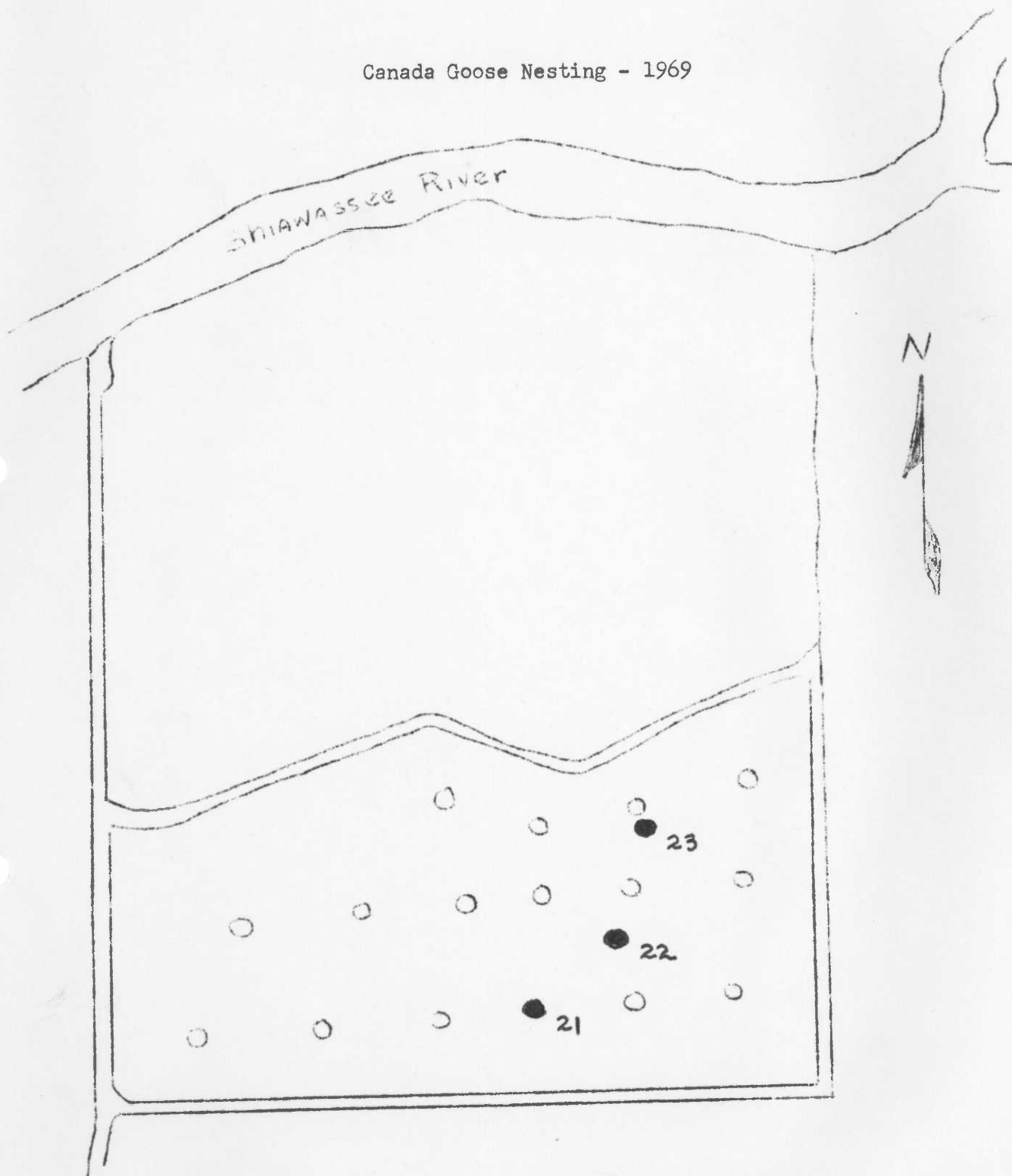
Pool 1A



Canada Goose Nesting - 1969

Pool 1b

Canada Goose Nesting - 1969



Pool 2

Snows on November 3, a new record refuge fall peak for geese. This peak held for two weeks and geese started moving south the third week of November. There were still 12,000 geese present on December 5, but movements continued until the last geese were gone on December 23. Thus for the first time in several years, there are no geese using the refuge at the end of the year.

New peaks were established in 1969 for goose use with a peak goose population of 38,000 (fall) and a total of 2,913,515 goose use days in 1969.

The migrant geese utilized available barley, wheat, and buckwheat early in the period, moved to winter wheat and other browse as it germinated, fed exclusively on sugar beets during October and November and finished with corn and green browse following the first hard freeze.

There were no reported observations of neck-banded geese during the year.

One White-fronted goose was observed regularly November 3 to 11 feeding on sugar beets in Farm Unit 1A with 12,000 Canada geese.

3. Ducks. The estimated 1,100 ducks, Mallards and Black ducks, using the refuge at the beginning of the year, departed ahead of the first major storm during the first week of January. The first spring migrants were observed on February 28 with the appearance of Mallards, Black ducks, Goldeneyes and Common Mergansers. Lesser Scaup were present on March 2, Pintails arrived on March 5, and between March 17 and 26 Canvasbacks, Redheads, Blue-winged Teal, Buffleheads, Shovelers, American Widgeon, Ring-necked ducks, and Hooded Mergansers arrived at the refuge. Green-winged Teal were first observed on March 26 and the first Wood ducks arrived on March 29. Gadwalls were first reported on April 8, and when the Ruddy ducks were observed on April 25, all common species were accounted for.

The spring peak duck population of 26,500 was reached the first week of April and, as a reflection on the absence of major flooding at that time, was considerably higher than the 1968 peak of 7,000 ducks. A major movement occurred the third week of April and the summer population had stabilized at an estimated 1,100 ducks early in May.

The first brood, Wood ducks, was observed on June 9. Random brood observations during the summer indicated refuge duck population to be about 300. This is not a production refuge and only limited duck nesting cover is available for the common nesting species, Mallards, Wood ducks and Blue-winged Teal.

Numbers of ducks using the area began to increase late in July as local area ducks moved into the refuge. By September 1 there were 9,000 ducks on the refuge and numbers continued to increase weekly until the peak population of 88,000 was recorded during the second week of November. This established a new record peak duck population for the refuge, surpassing the previous record of 71,200 in 1967. The ducks started leaving as the season progressed and weekly populations declined until the last ducks left about December 23.

Duck use days for 1969 totalled 5,396,326, also a new record for the refuge exceeding the previous high set in 1968 with 4,719,374 use days. This higher use day total reflects the higher peaks of the spring migration, which was near normal after two years of low peaks, as well as the new record fall peak duck population.

Spring migrants fed primarily on flooded corn and millet. During the summer months, feeding activities were confined to pool areas with an abundance of natural foods available there. As harvest operations commenced ducks started utilizing stubble fields, soybeans, and corn as it became available.

Flooded corn and millet on the adjoining state game area proved attractive to the ducks and major feeding flights between the refuge and the game area were daily occurrences.

4. Coots and Gallinules. Coots were first seen on March 22 in Pool 1A. By March 26, 30 were present, and the peak of 200 was recorded on April 10, which was also the summer population. Production of Coots was about normal for the area this year and broods were commonly observed in Pool 2 during the summer. Again in 1969, there was no appreciable fall build-up of Coots and the last observation was recorded on November 23.

Common Gallinules were first recorded on April 30 when three were observed in Pool 2. Observations during the summer were quite rare, but a few broods were produced. Gallinules were last reported on November 2 with a single bird observed in the cattails of Pool 2.

5. Other Water Birds. Recorded dates of first spring observations for the various species were over an extended period commencing with sightings of Great Blue Heron on March 22 followed by one Sandhill Crane on March 30, Pied-billed Grebe on April 9, American Bittern on April 10, Sora Rail on April 30 and American Egret, Green Heron, and Black-crowned Night Heron on May 11. Populations of the various species were about normal during the year and all species, except Great Blue Heron had migrated by late October. Eleven Great Blue Herons were still present on the area on December 5.

A Cattle Egret was observed along the north side of Pool 1A on April 30, and again on May 29 in the same approximate location.

6. Shorebirds, Gulls and Terns. Recorded spring arrival dates include Killdeer on March 22, Yellow-legs on April 3, and Dow-itchers, Spotted Sandpiper and unidentified "peeps" on April 30. Common terns and Black terns arrived early in May. Ring-billed Gulls and Herring Gulls are present on the refuge every month of the year. The late summer migration of shorebirds passed through this area in late July and early August, and all species except gulls had departed by the end of October.

B. Upland Game Birds.

Ring-necked Pheasants have continued to decline in Michigan. The few rare observations of pheasants on the refuge indicate only a token population remains. Again in 1969, there were no pheasant broods observed on the refuge, and few were seen in this area.

Mourning Doves are commonly observed every month of the year. Production appeared to be normal during the summer and the peak population was estimated at 300 the last week of September.

C. Big Game Animals.

Following the mass confusion of the bow hunting activities during December 1968, White-tailed Deer were scattered throughout the refuge and adjacent private lands. It was not until February 3 that any numbers of deer were again seen in the open croplands and corn fields of the refuge and at no time during the winter did the deer concentrate in large herds as in past years.

The first fawn was observed on May 29, and numerous daily observations on later dates indicated another bumper crop of deer. As expected, there were numerous observations of twins and rarely was doe seen with a single fawn.

The deer herd was estimated at 1,000 at the time the shotgun hunting season opened on November 15. During this season which extended through November 30, deer were pushed into the open croplands of the closed area and an actual count of 326 deer was tallied on November 23 inside the closed area.

It was estimated that about 200 deer were taken by hunters during 1969 seasons, with an estimated 80 bucks and 50 illegal antlerless deer taken during the 16 day bucks only shotgun season and 75 deer of either sex taken during the December bow and arrow season. X

The bow and arrow season extending from December 1-31 again scattered the deer concentrations and observations were infrequent the last half of December.

D. Fur Animals, Predators, Rodents and Other Mammals.

The muskrat population remains at a high level and damage to dikes continues to be a serious problem. The current population is estimated at 3,000 muskrats and permittee trapping operations are in progress. Pool 2 continues to benefit from the high population level as muskrats are effectively opening up the dense cattail stands, tending to offset somewhat the problems with dike damage in that area.

Beaver, protected from trapping in this part of the state, continue to increase. There are at least nine active colonies on the refuge in or near Pools 1 and 2. Beavers returned to the Eastwood Drain this fall, resumed removal of the cottonwood windbreak and damming of the drain, and had to be removed.

Mink and Weasel populations remain at low levels.

Raccoons are numerous and apparently increasing.

Skunks are present in normal numbers and infrequently observed.

Red foxes remain at a high population level and are commonly observed on their daily hunting activities. Foxes serve as efficient scavengers and have presented no specific problems. Fox fur has increased in value and interest in trapping and hunting foxes is high at the present time.

E. Hawks, Eagles, Owls, and Crows.

Sparrow hawks and American Rough-legged hawks were frequently observed during the winter. Marsh hawks, Red-tailed hawks and Turkey vultures are commonly observed summer residents, and appeared to be present in normal numbers.

Bald Eagles have been observed periodically all year, generally in the Pool 1 area of the refuge. Observations indicate there are two adult and two immature eagles in this area. One adult Bald eagle was last seen December 19.

Great horned owls, short-eared owls, long-eared owls and screech owls are resident species and have been infrequently observed during the year. There were no recorded observations of Snowy owls on the refuge during 1969.

Crows are observed on the refuge almost every month of the year. This years peak, 200 birds, was present during most of September.

F. Other Birds.

No unusual observations during the year.

G. Fish.

Carp infest all rivers and refuge pools but control measures will be useless so long as the refuge remains subject to annual flooding.

H. Reptiles and Amphibians.

No unusual observations during the year.

I. Disease.

There were no recorded outbreaks of diseases, except the usual number of swans that weaken and die, apparently from lead poisoning, each year during the migration period. It has been assumed the swans pick up lead on their wintering area and only make it this far north before they weaken and die.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

1. Dikes and Ditches.

Minimum flood damage repair was completed to Pool 2 dikes, Pool 1 low level dike, and to the east dike of Farm Unit 2C.

Approximately one quarter mile of new dike was constructed along the south side of Farm Unit 2C to protect refuge croplands from flooding from the Eastwood County Drain.

A spillway was installed in the east dike of Pool 3.

Approximately one quarter mile of new dike was constructed along the west side of Farm Unit 9D to furnish flood protection to the east side of the refuge.

Ditch clean-outs were completed on Farm Units 7A, 8 and 9D to bring to grade for more efficient operation of drain tile.

All dike tops mowed periodically as required during the summer.

2. Roads and Trails.

All refuge roads were graded periodically as required. Interior roads in Farm Unit 8 were re-shaped and graded in conjunction with grading of Evon Road.

Roads on the Johnson Tract were cleared of dead and down trees and mowed out to permit travel during deer hunting seasons.

Additional gates were constructed to close access roads, and repairs and/or replacement completed for existing gates.

Nature trail maintenance required periodic mowing, sign replacements, and removal of fallen trees.

3. Fencing and Posting.

The entire refuge boundary was checked and reposted where required prior to hunting seasons. Permit hunting signs were posted prior to the December archery season, and signs removed at close of season.

Lake St. Clair Refuge and Wyandotte Refuge posting was completed in September, and all bouys removed after close of waterfowl season.

Boundary fences were repaired in several areas, several times during the year, especially on the north side of the refuge where the greatest trespass problems exist.

Additional boundary fence was installed in northeast part of the refuge along Smith Road, and the fence along Curtis Road was completely re-constructed.

4. Miscellaneous Jobs.

All regular and routine repairs and maintenance of vehicles, heavy equipment, pumps and buildings were completed as scheduled.

Old buildings were removed from Fawcett tract.

Pumps on Farm Unit 8 were pulled, repairs completed, and then pumps were reset.

Old brush piles on Farm Unit 9G were dozed and raked. Permittee re-piled the debris for burning.

New dikes were levelled and seeded to grass cover.

The managed goose hunting program was conducted and involved repairs to blinds, getting blinds set out in fields, and removal of blinds following the close of the goose season.

Started construction of a primitive picnic area in the woods along the nature trail.

Standing corn was knocked down so it would be available to the spring migrants.

B. Plantings.

1. Aquatic and Marsh Plants.

None.

2. Trees and Shrubs.

None.

3. Upland Herbaceous Plants.

None.

4. Cultivated Crops.

Farm crops were planted on 2,706 acres of refuge croplands and an additional 271 acres could not be planted in 1969 due to flood conditions and the inability to remove flood waters early enough to permit farming operations. All farming operations were conducted under cooperative farming agreements with local farmers. Refuge crops and yields data are summarized on NR-8, and in the following tabulations. Nine crops were produced on refuge lands in 1969 and included corn, white beans, soybeans, barley, wheat, oats, millet, buckwheat, and sugar beets.

The first field work on refuge croplands was on April 14 but all field work was halted the first week of May because of heavy rains and the general flooding that followed. Most field work was resumed the third week of May, putting area farmers about two weeks behind normal. It was not possible to replant Farm Units 3 and 4 until the last week in June, while Farm Units 6 and 2H were not farmed at all, because of the flooding.

With the season running about two weeks late, drastic adjustments were required in our crop plans, resulting in reduced acreages of corn, wheat and barley and the substitutions of millet and buckwheat for the refuge share in several crop units.

Weather conditions varied from too wet in the spring, too dry during August and September, and back to too wet in October and November. The wheat and barley was harvested in late July and early August on schedule, but all other crops were late. The two weeks delay in the harvest of white beans resulted in late seeding of winter wheat and browse crops, with the first browse seeding not started until September 10. The corn harvest was started on refuge lands during the first week of November and was not completed until November 29.

The refuge share of farm crops left in the field for wildlife was 133 acres of corn, 17 acres of soybeans, 322 acres of barley, 57 acres of wheat, 10 acres of oats, 116 acres of buckwheat, 147 acres of millet and 13 acres of sugar beets. Twenty-one acres of corn were harvested, yielding 1,840 bushels of dry shelled corn, for refuge use and for transfer to Seney and Ottawa Refuges.

Cover crops were seeded on 1,252 acres for erosion control, soil building, and/or browse.

SHIAWASSEE NATIONAL WILDLIFE REFUGE

REFUGE CROPS - 1969

<u>CROP</u>	<u>TOTAL ACREAGE</u>	<u>% OF TOTAL</u>	<u>AVE. YIELD</u>	<u>AVE. VALUE</u>
WHEAT	129	4.8	53	\$ 55.27
BARLEY	359	13.3	39	35.07
CORN	476	17.6	85	85.56
WHITE BEANS	909	33.6	24	85.51
SOYBEANS	354	13.0	32	69.49
BUCKWHEAT	116	4.3	Not Harvested	
MILLET	147	5.4	Not Harvested	
OATS	30	1.1	Not Harvested	
SUGAR BEETS	187	6.9	19	185.49
TOTALS:	2,998	100.0	--	\$ 86.06 (ave.)

CROP YIELDS - 1969

WHITE BEANS

<u>COOPERATOR</u>	<u>ACRES</u>	<u>CWT/ACRE</u>	<u>\$/ACRE</u>
Almy, I.	187	18.9	110.57
Berkert, W.	30	7.0	41.03
Boese, M.	149	15.2	88.92
Bremer, G.	70	17.4	101.79
Bruns, J.	12	13.8	75.98
Fawcett, H.	14	9.8	63.60
Gosen, J.	114	15.0	87.75
Gosen, H.	48	9.1	53.26
Hart, M.	39	10.1	59.20
Pagel, C.	28	21.2	124.02
Peaphon, A.	* 24	17.0	114.75
Schluckebier, A.	124	16.3	100.24
<hr/> TOTAL:	<hr/> 909	<hr/> 14.2 ave.	<hr/> \$ 85.51 ave.

CROP YIELDS - 1969

CORN

<u>COOPERATOR</u>	<u>ACRES</u>	<u>BU/ACRE</u>	<u>\$/ACRE</u>
Almy, I.	63	77	76.23
Boese, M.	128	102	110.16
Bremer, G.	35	Not Harvested	
Bruns, J.	22	88	74.80
Fawcett, H.	20	80	Not Sold
Gempel, J.	5	Not Harvested	
Gosen, C.	10	84	83.16
Schramke, C.	20	78	84.28
Peaphon, A.	62	87	86.13
Schluckebier, A.	111	85	84.15
<hr/> TOTAL:	<hr/> 476	<hr/> 85 ave.	<hr/> \$ 85.56 ave.

SOYBEANS

<u>COOPERATOR</u>	<u>ACRES</u>	<u>BU/ACRE</u>	<u>\$/ACRE</u>
Fawcett, H.	45	25.8	55.99
Gempel, J.	34	29.4	62.03
Gosen, C.	51	40.5	89.10
Hart, M.	137	26.1	57.16
Schrems, G.	25	40.5	89.10
Schramke, C.	40	37.0	81.77
Weigl, R.	22	24.0	51.28
<hr/> TOTAL:	<hr/> 354	<hr/> 31.9 ave.	<hr/> \$ 69.49 ave.

CROP YIELDS - 1969

BARLEY

<u>COOPERATOR</u>	<u>ACRES</u>	<u>BU/ACRE</u>	<u>\$/ACRE</u>
Boese, M.	88	Not Harvested	
Bremer, G.	15	47	37.60
Bruns, J.	22	24	31.46
Peaphon, A.	51	45	36.14
Schrems, G.	13	Not Harvested	
Schramke, C.	20	Not Harvested	
Schluckebier, A.	140	Not Harvested	
Weigl, R.	10	Not Harvested	
<u>TOTAL:</u>	<u>359</u>	<u>39 ave.</u>	<u>\$ 35.07 ave.</u>

WHEAT

<u>COOPERATOR</u>	<u>ACRES</u>	<u>BU/ACRE</u>	<u>\$/ACRE</u>
Bremer, G.	55	56.5	55.37
Pagel, C.	42	50.9	50.39
Peaphon, A.	32	51.6	60.05
<u>TOTAL:</u>	<u>129</u>	<u>53.0 ave.</u>	<u>\$ 55.27 ave.</u>

SUGAR BEETS

<u>COOPERATOR</u>	<u>ACRES</u>	<u>TONS/ACRE</u>	<u>\$/ACRE</u>
Bremer, G.	30	16.9	154.80
Peaphon, A.	51	15.3	155.99
Schluckebier, A.	106	22.4	214.19
<u>TOTAL:</u>	<u>187</u>	<u>18.9 ave.</u>	<u>\$185.49 ave.</u>

C. Collection and Receipts.

1. Animal Specimens. A mink, found dead near the electric pumps, was prepared as a study skin by Assistant Refuge Manager Hoff.
2. Refuge Herbarium. No specimens were added this year.

D. Control of Vegetation.

Noxious weed control on refuge croplands was completed by the cooperator farmers as a condition of their cooperative farming agreements. Their use of chemical herbicides was limited to those on the approved list of herbicides.

Control of willows and weeds along roads, ditches, dikes and fence rows was completed by refuge personnel in June and July using a mixture of 2,4-D and 2,4,5-T with refuge spraying equipment.

Mechanical weed control for field grass strips was accomplished by periodic mowing by refuge personnel.

E. Planned Burning.

None.

F. Fires.

There were no fires on refuge lands during 1969.

IV. RESOURCE MANAGEMENT

A. Grazing.

None in 1969.

B. Haying.

None in 1969.

C. Fur Harvest.

The regular 1968-69 trapping season ended on January 31, 1969, but a special extension of the muskrat trapping season through March 31 was authorized for refuge marshes. Three trappers were issued permits for the 1968-69 season. Final results of the 1968-69 season were removal of 1,721 muskrats, 4 foxes, 3 raccoons, 3 opossums, 1 skunk, and 4 beaver. All muskrat furs were sold by the trapping permittees for the best price they could get and 40 percent of the proceeds was paid to the Bureau as the refuge share. The trappers received a total of \$1,934.40 for the furs, an average price of \$1.12 each. The refuge share of the fur harvest was \$773.92.

A sample of the muskrat pelts was checked by Assistant Manager Hoff prior to the sale for sexing and ageing. Results were as follows:

<u>Adult</u>		<u>Immature</u>	
<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
58	64	101	96

From this age and sex ratios were computed as 1 adult : 1.6 immature and 1 female : 1.01 male.

An interesting note is that of the 1,721 muskrats taken, 1,362 were taken from the 115 acre Pool 2, 11.8 muskrats per acre.

The 1969-70 Michigan trapping season will extend from November 15, 1969 through January 31, 1970, but we again have been given special extension of the season through March 31, 1970. As of December 31, 1969 the three trappers who were issued trapping permits have removed 599 muskrats, 17 foxes, 9 raccoons, 8 opossums, 4 skunks, 1 beaver, and 1 large black cat.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Canada Goose Nesting Flock.

The formal wildlife management study was completed in 1968 and final report submitted early in 1969.

It is planned to collect additional data on nesting success, mortality and migrational behavior annually with this information to be summarized and placed in the refuge files.

B. Whistling Swans.

The formal wildlife management study was completed in the spring of 1968 and the final report has been submitted.

Additional data will be collected in future years to add to information on migration patterns, mortality, etc.

In 1969 a total of 23 whistling swans was trapped during the spring migration, using field sets of the cannon-net trap. All swans were aged, sexed and banded. Prior to release the swans were banded with yellow plastic leg and neck bands, and dyed pink.

Pink swans were reported from Michigan, Wisconsin, Minnesota, North Dakota, Saskatchewan and the Northwest Territories following their release in late April.

C. Marsh Transect Surveys.

The nine line-intercept transects, established in 1964, were surveyed by Assistant Refuge Manager Hoff during August, following the established guidelines and techniques. Quadrats on the transect established in 1956 were also inventoried and photographed in August and early September. Color slides taken were added to the transect slide file.

All data from marsh transect surveys has been compiled and graphed, and placed in the refuge files.

D. Banding.

Waterfowl banding operations were conducted between April 3 and September 30, 1969. All trapping was accomplished through use of the cannon-net trap, except the drive trapping of the goslings.

Goose banding was limited to spring and fall migration periods, plus drive trapping the annual gosling production, while duck banding was limited to the fall migration, pre-hunting season period.

A total of 491 ducks, 468 geese and 23 swans was banded during the year. Complete data is included in Table II.

TABLE II

Waterfowl Banding - 1969

Species	<u>Local</u>		<u>HY</u>		<u>AHY</u>		Total
	Male	Female	Male	Female	Male	Female	
Mallard	-	-	173	85	109	89	456
Black duck	-	-	4	8	15	4	31
Pintail	-	-	1	-	-	1	2
Am. Widgeon	-	-	1	-	1	-	2
Total Ducks	-	-	179	93	125	94	491
Canada Goose	30	38	9	20	214	157	468
Whistling Swan	-	-	-	-	7	16	23
Total	30	38	188	113	346	267	982

E. Sugar Beet Utilization by Canada Geese.

The objectives of this study are to determine actual utilization of sugar beets by Canada geese and other wildlife species at Shiawassee Refuge, determination of food values, if any, of sugar beets for geese, and determination of the best harvesting methods to furnish goose utilization, as compared to increased refuge costs for roads maintenance during harvest periods.

In 1968, eight acres of sugar beets, taken as part of the refuge share, were lifted and spilled on top of the ground to see if geese could and would feed on whole sugar beets. We found the geese would feed on whole beets as all beets were consumed within a two week period. This amounted to 196 tons of sugar beets. This use of whole beets on top of the ground was so effective that we were accused of baiting by the Division of Management and Enforcement.

In 1969, the second year of the study, there were 187 acres planted to sugar beets on refuge lands. To avoid violation of baiting regulations the crop was handled differently this year. Thirteen acres of sugar beets were taken as part of the refuge share. These acres were in four separate locations, and at each location our acreage was topped but the beets were left in the ground, with the cooperating farmer agreeing to come back and lift those beets following the close of the goose hunting season.

Beets left in the ground in Farm Units 1A and 1B (135 tons) were completely eaten out of the ground by the geese, beets left in Farm Unit 5 were partially eaten, and beets left in Farm Unit 2B were not used at all. Following the close of the goose hunting season at noon on November 14, remaining beets in Farm Units 2B and 5 were lifted and spilled on top of the ground. There were no beets left to lift in Farm Units 1A and 1B.

Geese continued to feed on beet residues in Farm Units 1A and 1B, and on whole beets in Farm Unit 5 until the first hard freeze the last week of November. The whole beets were never used by geese in Farm Unit 2B.

Deer were also observed feeding on beets from time to time during the period.

A separate more detailed report has been previously submitted.

VI. PUBLIC RELATIONS

A. Recreational Use.

More people continue to "discover" the refuge each year with increased demands for public use. The greatest demand is just to see the wildlife, and while many wish to do this from the comfort of the automobile the great majority will get out and walk and they appreciate the extremely limited facilities we have to offer on our nature trail. Use of the trail increases each year with some use every month of the year, and heavy use on spring and summer week-ends. By actual count, 222 people walked the trail on Sunday, April 13, which was an average day. X

a The guided automobile tour, conducted on week-ends during the spring migration period, continues to increase in popularity. Individuals and family groups came from all over southeastern Michigan again in

1969. While those groups that take the guided tour return home happy, those who are turned away have a different outlook. The only limitations on numbers of people that would participate in the tour are the physical limitations restricting the numbers who can be accommodated, and condition of refuge roads which often cannot be travelled in a private automobile. Through word of mouth advertising our fame is spreading and it seems a little ridiculous that we in effect invite several hundred people to the area and then cannot offer even as little as toilet facilities for their use. X
On the four week-ends tours were operated, between March 22 and April 13, it was estimated that 2,270 individuals were given the tours.

An additional 1,060 individuals walked the nature trail during these same four week-ends. Many of the walkers had planned to take the car tour but did not want to wait in line for as much as two hours for their turn.

B. Refuge Visitors.

<u>Date</u>	<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>
Feb. 12	Lyle Miller	FWS, Safety, Mpls., Minn.	Safety Inspection
Mar. 12	Ed Mikula	Mich. DNR, Lansing	Goose Hunting Program
12	Marv. Johnson	Mich. DNR, Rose Lake	Goose Hunting Program
12	H. Dykema	Mich. DNR, St. Charles	Goose Hunting Program
12	Dr. M. H. Pirnie	Mich. State U., E. Lansing	Photography
17	H. Dietrich	Saginaw Co. Drain Comm.	Drainage
19	H. Prince	Mich. State U., E. Lansing	Photography
21	Chess Lyons	National Audubon Soc.	Touring
21	Arthur Flucke	Forester M. B. Co.	Touring
21	Alfred Vogel	Audubon Society, Saginaw	Touring
21	Lester E. Eyer	Alma College, Alma	Visit
28	Paul DuMont	SCS., Lansing	Land Use
Apr. 9	W. W. H. Gunn	Canadian Wildlife Service	Swan Study
9	E. R. Banting	Canadian Wildlife Service	Swan Study
18	Bill Shake	FWS, Wildlife Services, Lans.	Visit
26	Thomas Heatley	Audubon Society, Mt. Pleasant	Visit
26	Bruce H. Hodess	Audubon Soc., Mt. Pleasant	Visit
26	Pat Wilkie	Audubon Soc., Mt. Pleasant	Visit
26	Tim Nowicki	Audubon Soc., Mt. Pleasant	Visit
May 14	Don Young	FWS, Ottawa Refuge	Equip. Transfer
14	Boyd Dennison	FWS, Ottawa J.C.C.C.	Equip. Transfer
Jun. 2	C. T. Rollings	FWS, Refuges, Mpls., Minn.	Land Use Program
10	Ed Mikula	Mich. DNR, Lansing	Goose Hunting Program
10	Marv. Johnson	Mich. DNR, Rose Lake	Goose Hunting Program
10	H. Hykema	Mich. DNR, St. Charles	Goose Hunting Program
10	E. Juderjohn	Mich. DNR, Rose Lake	Radio Repairs
17	E. Stevenson	FWS, Engineering, Mpls.	Flood Damage
20	Dave Hollis	Saginaw Chamber of Comm.	Recreational Use
30	Bill Oliver	U. S. Forest Serv., Calif.	Visit
July 9	Jerry Malone	SCS, Saginaw	Rural Development

<u>Date</u>	<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>
July 14	James Monnie	FWS, Refuges, Mpls., Minn.	Inspection
15	Dr. W. E. Green	FWS, Winona, Minn.	Biol. Projects
26	Dr. Wm. Slayden	Johns Hopkins U., Baltimore	Swan Studies
Aug. 1	James Mayle	FWS, Lan Luis Refuge, Cal.	Visit
Sept. 5	Don Young	FWS, Ottawa Refuge	Corn Transfer
8	Bernie Hubbard	FWS, Seney Refuge	Timber Sale
8	Mike Moore	Mich. DNR Forester	Timber Sale
Oct. 12	Abe Tunnison	FWS, Washington	Inspection
12	Louis Garlick	FWS, DD, Minneapolis, Minn.	Inspection
12	Woodall	FWS, Washington	Inspection
23	Dr. D. Douglas	Mich. DNR, Lansing	Flood Control Meeting
23	L. A. Davenport	Mich. DNR, Lansing	Flood Control Meeting
23	Herb Miller	Mich. DNR, Lansing	Flood Control Meeting
25	G. Brakhage	FWS, M&E, Mpls., Minn.	Goose Mgt. Problems
Nov. 5	Parker Smith	FWS, M&E, Atlanta, Ga.	Hunting Program
5	Ed Mikula	Mich. DNR, Lansing	Hunting Program
Dec. 3	Mr & Mrs Kerschbaum	U.S. Army (former mgr.)	Visit
4	Dr. M. D. Pirnie	Mich. State U., E. Lansing	Photography
9	Herb Dietrich	Saginaw Co. Drain Comm.	Spaulding Drain Problems
9	Loren Popp	Local farmer	Spaulding Drain Problems
9	James Malone	Local farmer	Spaulding Drain Problems
24	Jerry Updike	FWS, Lower Souris Refuge	Visit

Periodic visitors included USGMA's Cross and Fuchs, Michigan Conservation Officers John Harris and Ray Ankney, and cooperator farmers.

C. Refuge Participation.

1. Refuge Tours.

March	11 - Lansing Community College Biology Class. (Hoff and Poma - 20)
	24 - Arthur Hill High School Natural Science Club. (Frye, Hoff, Poma, Robinson - 150)
	29 - Lansing Audubon Club. (Frye - 43)
	31 - Cub Scouts. (Frye - 12)
April	1 - Cub Scouts. (Poma - 18)
	2 - Alma College Biology Class. (Hoff - 15)
	8 - Cub Scouts. (Poma - 15)
	8 - Brite School 4th Grade. (Hoff - 60)
	12 - Washtenaw County Audubon Club. (Frye - 38)
	15 - Herrig School PTA Cub Scouts. (Poma - 42)

- April 16 - Bridgeport Elementary School 4th Grade.
(Poma - 37)
- 22 - Girl Scout Brownies, Sagiaw. (Frye - 30)
- 25 - St. Mary's School 7th Grade. (Hoff - 35)
- 30 - Salina School 1st Grade. (Poma - 50)
- June 27 - Tuscola County Home Extension Group. (Hoff - 12)
- July 10 - Salina School 3, 4 & 5 Grades. (Frye - 60)
- September 10 - Genesee County Parks & Recreation Commission.
(Frye and Hoff - 6)
- 24 - Flint Senior Citizens Group. (Hoff - 60)
- October 23 - Central Michigan University Class. (Hoff - 15)
- 23 - Michigan DNR Game Division Officials. (Frye - 4)
- 29 - Salina School, Saginaw. (Hoff - 65)

2. Meetings.

- March 12 - Frye, Hoff, and Robinson met with State Region III Game Division and Law Division personnel regarding goose hunting regulations.
- June 10 - Frye met with State Game Division personnel to set up managed goose hunting regulations for 1969.
- September 29 - Frye attended Saginaw Valley Flood Control Project meeting at Albee Township Hall.
- 30 - Frye attended meeting of Genesee County Parks and Recreation Commission in Davison to discuss goose management.
- October 23 - Frye attended Saginaw County Flood Control Project meeting at Saginaw County Courthouse.
- November 5 - Frye attended Saginaw County Flood Control Project meeting at Albee Township Hall.
- 7 - Frye and Robinson attended public meeting in Mt. Clemens, Michigan, regarding announced closing of Selfridge Air Force Base.

Periodically during the year Frye attended monthly meetings of the Saginaw County Agriculture Council, Spaulding Township Planning Commission, and Spaulding Township Park Commission. Frye continued to serve with the Spaulding Township Volunteer Fire Department and Poma served as Assistant Scoutmaster with his local troop.

3. Slide Talks.

January	22 - Saginaw Downtown Lions Club. (Frye - 56)
February	3 - Zilwaukee Lions Club. (Hoff - 30)
	4 - Saginaw YMCA - Fathers & Son Dinner. (Hoff - 280)
	17 - University of Michigan Wildlife Seminar. (Frye - 60)
	19 - Michigan State University Wildlife Club. (Frye - 30)
March	7 - Detroit Area Council, Boy Scouts, Leaders Meeting. (Frye - 220)
	10 - Saginaw County Agriculture Council. (Frye - 31)
	18 - Arthur Hill High School Natural Science Club. (Frye - 140)
	19 - Saginaw Civitan Club. (Frye - 18)
	20 - Saginaw Junior Reading Club. (Frye - 60)
	27 - Saginaw Women's Council of Federated Clubs. (Frye - 70)
April	1 - 4-H Clubs Council - Frankenmuth. (Frye - 36)
	10 - Y's Mens Club, Saginaw. (Hoff - 16)
	23 - Kochville Boy Scouts Troop 370. (Poma - 30)
	24 - Kaufman School 3rd and 4th Grades. (Poma - 120)
May	1 - Boy Scout Roundtable, Richville. (Poma - 40)
	13 - Michigan State Employees Association. (Frye - 180)
	20 - Birch Run Lions Club. (Frye - 36)
June	7 - Boy Scout Troop, Saginaw. (Hoff - 27)
	23 - NW Optimist Club, Saginaw. (Frye - 36)
October	10 - Bay County Agriculture Council. (Frye - 18)

4. Student Interviews.

Frye and Ottawa Refuge Manager Manke conducted student interviews for summer employment, and for permanent employment, at the University of Michigan on February 19, and at Michigan State University on February 20 and 21.

5. Radio and Television.

On December 13 a ten minute color film highlighting the opening day of the archery deer season on the refuge was aired on the syndicated "Michigan Sportsman" show on Station WXYZ-TV, Detroit. The feature was repeated over several local stations during the following week.

D. Hunting.

1. Managed Goose Hunting.

Managed goose hunting was conducted on perimeter areas of the refuge again in 1969. Special regulations were established for the area designated by the State as the Saginaw County Goose Management Area, which encompasses approximately 66,000 acres including the refuge and the State Game Area. Under the special regulations the goose hunting season opened on October 1 and ended November 14; hunting was limited to one-half days, from opening hour until noon; and the daily bag and possession limit was one Canada goose. Goose hunting only was permitted on refuge public hunting areas while both geese and ducks could be taken on private lands and on the State Game Area.

The refuge hunting plan provided for 25 blinds, with a maximum of two hunters per blind, to be available each day of the 43 day season. All blinds were assigned through advance mail applications as in previous years, whereby the successful applicants would be guaranteed a blind reservation for the date specified by them on their application.

Applications were made available to interested hunters the third week of August and had to be postmarked by September 15 to be eligible. All applications were sorted and filed as received. Only 572 valid applications were received for a total of 1,075 possible reservations. Major reasons for the small number of applications received were (1) news media failed to publish our releases, (2) the season opened ten days earlier than for the rest of the state instead of a delayed opening, as in past years, and (3) many local hunters preferred to take their chances on a daily stand-by basis.

This year the Bureau entered into an agreement with the Michigan Department of Natural Resources to permit the state to operate the managed goose hunting on Bureau lands located west of the

Flint River and north of the Shiawassee River. This was done to permit expanded hunting opportunities on lands difficult to administer through the Bureau hunting program primarily because public access to the two areas is only through state lands. Under the agreement the state managed the two areas under the Bureau public hunting regulations, including collection of the hunter fee, except that blinds were not reserved in advance but filled during the daily drawing for permits at the State Game Area Headquarters.

Drawings to determine successful applicants for blind reservations were completed on September 15 and validated reservation cards were mailed out to 124 different towns and cities in southern Michigan.

General procedures for the daily operation of the program were unchanged from previous years. Hunters with blind reservations were checked in, blinds assigned by luck of the draw, fees collected and then hunters were directed to their assigned blinds. Any blinds not filled by reservation were assigned to stand-by hunters by order of sign-up on a daily list.

With the exception of October 2, there were "no show" reservations every day of the season. On most days all stand-by hunters were accommodated but this year it was necessary, for the first time since the program was initiated, to turn hunters away on several weekend days.

During the course of the season 1,461 hunters participated in the Bureau program. Six hundred and fifty five (655) hunters, 45%, were stand-by hunters and many of these hunted several times during the season.

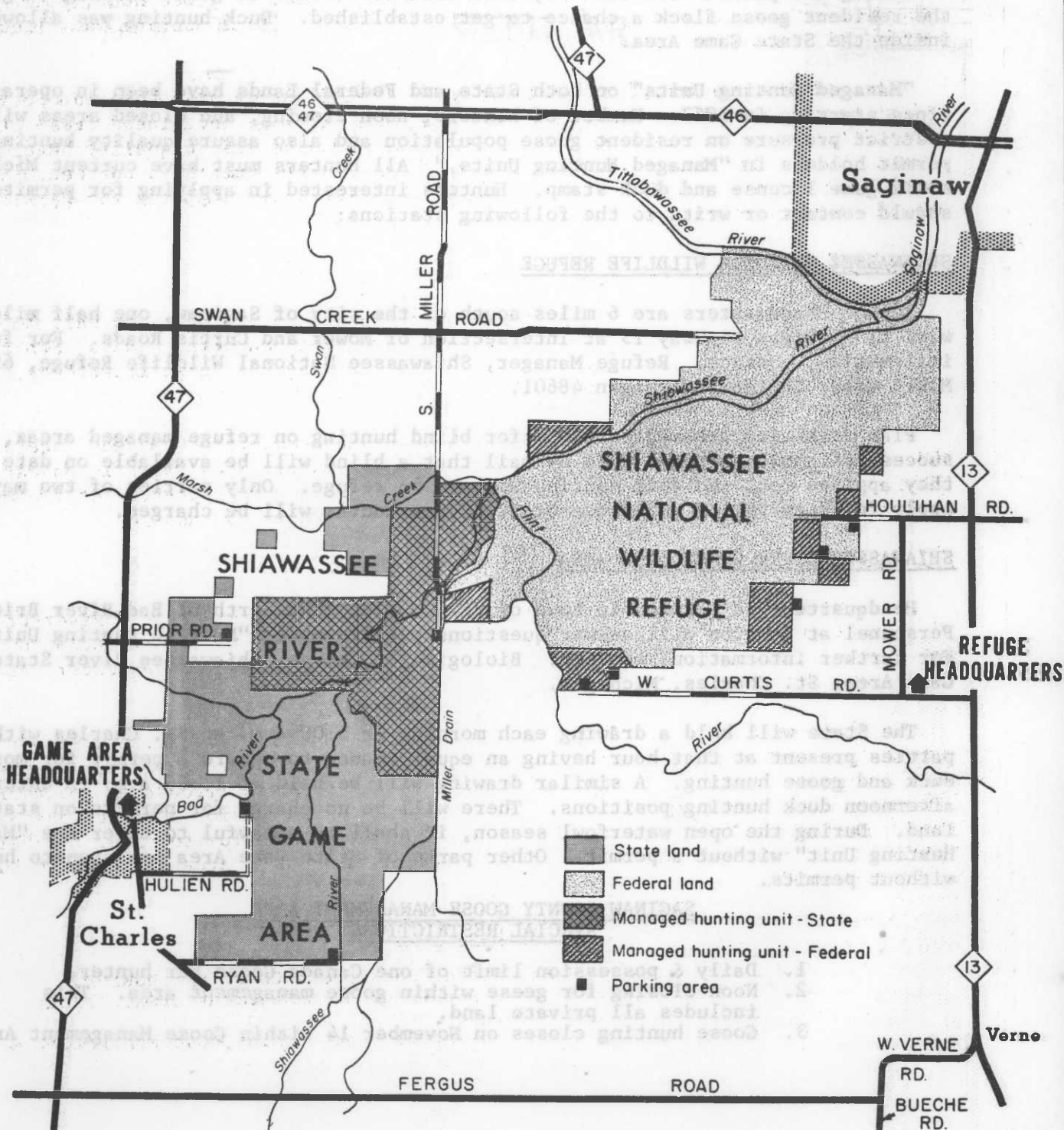
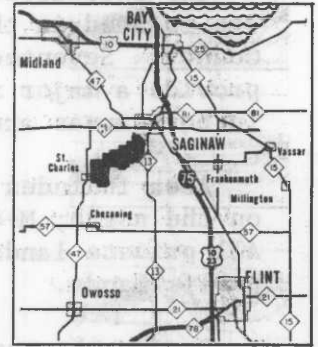
The state installed six pits and four blinds on Bureau lands operated by them. One hundred ninety two (192) hunters used the pits and blinds during the season, but they did not fill all shooting positions any day of the season. This was probably due to the fact that a fee was charged for Bureau lands while the state lands could be hunted free.

A total of 170 geese were taken from refuge managed hunting areas in 1969 with 124 taken from Bureau operated blinds and 46 taken from the pits and blinds operated by the state. Of the 170 geese taken, 137 were Canada geese, 28 were Blue Geese and 5 were Snow Geese.

There were only eight Canada geese taken that could be identified as part of our local flock. Identified by color leg bands, these included one 1964 hatched goose, one 1966, three from 1967 and three hatched in 1969. Age data from 137 Canada geese checked indicated that only 40.9% of Canada geese taken were immature birds, while data from 33 Blue and Snow geese taken showed that 84.8% of these were immature birds.

SAGINAW COUNTY GOOSE MANAGEMENT AREA

Scale:
0 1 2 3 Miles



SAGINAW COUNTY GOOSE MANAGEMENT AREA

The Shiawassee River State Game Area and Shiawassee National Wildlife Refuge are located in the center of this "Managed Waterfowl Area" in north-central Saginaw County. Seventeen thousand acres of public land dedicated to waterfowl management provide a major resting and feeding area for ducks and geese. Agricultural crops in both areas are being produced on a co-operative basis with local landowners.

Area includes that part of Saginaw County enclosed by M-13 on the east; M-46 on the north; M-47 on the west; and Fergus, Bueche, and Verne Roads on the south. All private lands within these boundaries have the same hunting restrictions as public lands.

During the period from 1964-66, this area was closed to goose hunting to give the resident goose flock a chance to get established. Duck hunting was allowed inside the State Game Area.

"Managed Hunting Units" on both State and Federal Lands have been in operation since starting in 1967. Number of hunters, noon closing, and closed areas will restrict pressure on resident goose population and also assure quality hunting for permit holders in "Managed Hunting Units." All hunters must have current Michigan small game license and duck stamp. Hunters interested in applying for permits should contact or write to the following stations:

SHIAWASSEE NATIONAL WILDLIFE REFUGE

Refuge Headquarters are 6 miles south of the city of Saginaw, one half mile west of Michigan Highway 13 at Intersection of Mower and Curtis Roads. For further information, contact: Refuge Manager, Shiawassee National Wildlife Refuge, 6975 Mower Road, Saginaw, Michigan 48601.

Plan calls for pre-registration for blind hunting on refuge managed areas, and successful applicants notified by mail that a blind will be available on date they applied for. No duck hunting allowed on refuge. Only parties of two may apply for permits. A daily fee of \$2.00 per hunter will be charged.

SHIAWASSEE RIVER STATE GAME AREA

Headquarters is located in town of St. Charles just north of Bad River Bridge. Personnel at station will answer questions pertaining to "Managed Hunting Unit." For further information, contact: Biologist In Charge, Shiawassee River State Game Area, St. Charles, Michigan.

The State will hold a drawing each morning at 5:00 a.m. at St. Charles with all parties present at that hour having an equal chance to secure a permit for morning duck and goose hunting. A similar drawing will be held at 11:00 a.m. to determine afternoon duck hunting positions. There will be no charge for permits on state land. During the open waterfowl season, it shall be unlawful to enter the "Managed Hunting Unit" without a permit. Other parts of State Game Area are open to hunting without permits.

SAGINAW COUNTY GOOSE MANAGEMENT AREA SPECIAL RESTRICTIONS

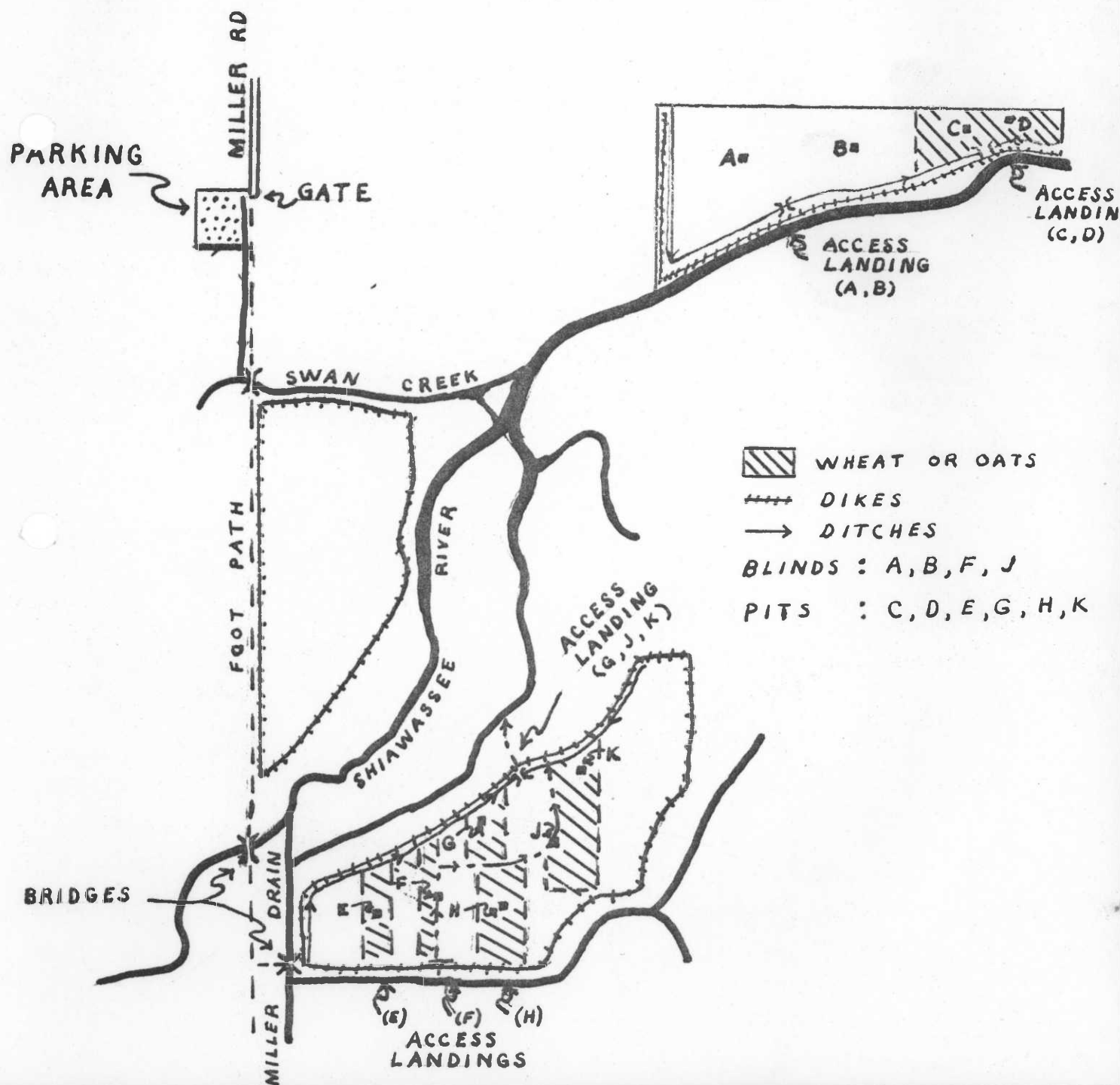
1. Daily & possession limit of one Canada Goose per hunter.
2. Noon closing for geese within goose management area. This includes all private land.
3. Goose hunting closes on November 14 within Goose Management Area.

SHIAWASSEE NATIONAL WILDLIFE REFUGE

Hunting Areas under State Administration

-REGULATIONS-

1. NO DUCK HUNTING. GOOSE HUNTING IN A.M. ONLY.
2. DAILY & POSSESSION LIMIT OF ONE CANADA GOOSE PER HUNTER.
3. ONLY PARTIES OF TWO ARE ELIGIBLE FOR PERMITS.
4. DAILY FEE OF \$ 2.00 PER HUNTER.
5. SHOTGUN SIZE LIMITED TO 16 GA. OR LARGER.



Included in the total of Canada geese taken were 27 immature males (19.7%), 29 immature females (21.2%), 39 adult males (28.5%) and 42 adult females (30.6%).

The average Canada goose weighed 7.9 pounds, with a range in weight from a low of 2.25 pounds to the high of 13.25 pounds; and Blues and Snows averaged 5.0 pounds, ranging from 3.25 pounds to 8.25 pounds.

The overall hunter success ratio for the season was 10.3%, which indicated a successful season from the hunter standpoint. As in the two previous years, the hunters indicated they are satisfied with our program. Many hunters returned to hunt on a standby basis several times during the season, and all stated they would be back next year. X

Total receipts from the hunting program this year were \$4,315.00. This is the total of \$3,306.00 for hunter fees and \$1,009.00 collected from rentals of goose decoys.

2. Deer Hunting.

The firearms deer hunting season extended from November 15 through November 30, and firearms were limited to shotguns in this part of the state. As in past years approximately two-thirds of the refuge was open for deer hunting during the bucks only season, an area of approximately 6,000 acres. It was a normal season with multitudes of hunters taking few legal deer, and illegal kills totaling approximately half of the legal kill. It was estimated from car counts that 5,200 hunters visited the refuge during the 16 day season, with a legal kill of 80 bucks and an illegal kill of 50 antlerless deer.

The entire refuge acreage was again open to bow and arrow deer hunting during Michigan's late archery season, December 1 through December 31. In an attempt to reduce the hunter problems encountered during the 1968 season, it was decided to limit the numbers of bow hunters on refuge lands for the first 15 days of the season, by issuance of permits to 500 hunters. No permit would be required for the remainder of the season.

Notice was released to all news media during the last week of August, that bow hunters could apply for a permit to hunt refuge lands from December 1 through December 15, by mailing a blank, self-addressed post card to the refuge office. All applications had to be received at the refuge office by 3:00 P.M. on November 14, 1969, and 500 cards would be drawn to receive the permits. The post card, validated by a stamp (Exhibit 1) would serve as the permit, and would be valid for the first 15 days of the season.

EXHIBIT I

Your name was drawn to participate in the special bow and arrow deer hunt on Shiawassee National Wildlife Refuge during the period December 1-15. Applicable state and refuge regulations apply. This permit must be carried at all times while on the refuge.

Signature of Permittee

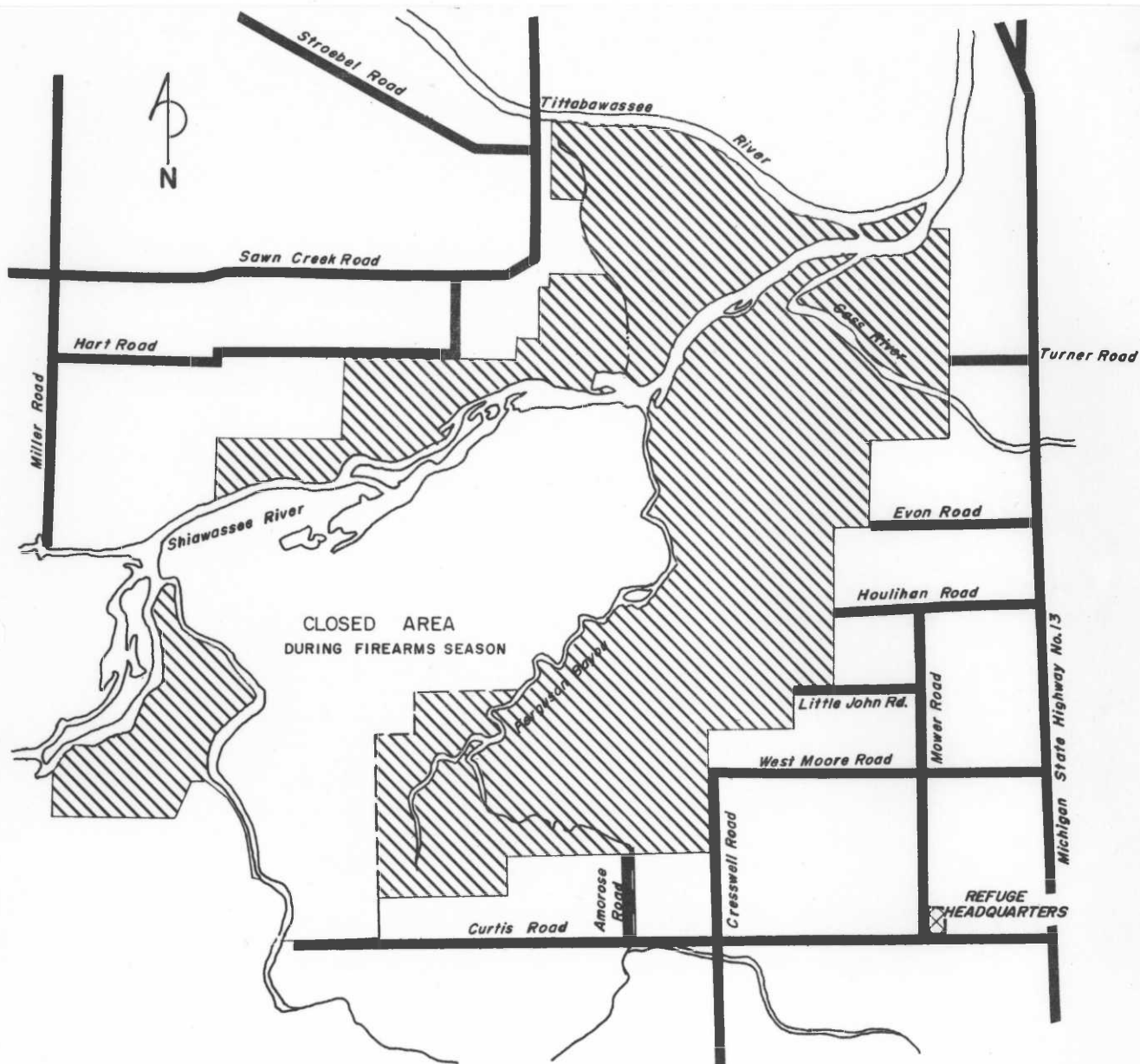
Permit No.

Stamp to validate cards submitted by
successful archery deer hunting applicants.

Your name was not drawn for special bow and arrow deer hunt on Shiawassee National Wildlife Refuge during the period December 1-15.

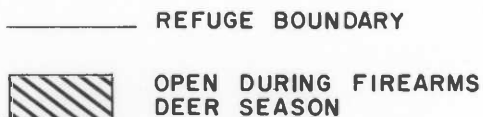
No permit will be required to hunt deer with bow and arrow on the refuge during the remainder of the season, December 16-31.

Stamp to notify unsuccessful applicants
for archery deer hunting permit.



SHIAWASSEE NATIONAL WILDLIFE REFUGE

DEER HUNTING REGULATIONS



1 INCH = 1 MILE

GENERAL REGULATIONS

Public hunting for deer only, in accordance with State Deer Hunting Regulations, authorized only on areas designated Public Hunting Area, by signs, during the firearms season, November 15 - 30.

All refuge lands open to bow and arrow hunting for deer during the late season, December 1 - 31, only. Special permit required for bow and arrow hunting during the period December 1 - 15. No permit required from December 16 - 31.

All hunters must exhibit their hunting license, deer tag, game, and vehicle contents to Federal and State Officers upon request.

The first post card applications were received on September 3, and by the cut-off date, November 14, 2,551 applications were received for the 500 permits. The drawing was conducted on November 14 and the 500 successful application post cards were stamped for validation and mailed back to the applicants. The remaining 2,051 cards were stamped to indicate they were unsuccessful (Exhibit 1) and also mailed back to the applicants, at a later date.

Issuance of permits did effectively limit numbers of bow hunters, but did not do much to weed out the undesirable types as we had hoped. There were still more hunters with bows than bow hunters again this year.

During the 31 day season 3,950 hunter visits produced a kill of 75 deer of any age or sex.

We are still not too happy with bow hunting on the refuge as it seems a most inhumane method to kill deer.

It was with great sighs of relief the season was finally wrapped up on December 31, completing three solid months of hunting on refuge lands, which had started way back on October 1 with opening of the goose season. It seemed rather nice to become re-acquainted with our families.

E. Violations.

Major problems exist with regard to trespass violations, particularly trespass by motorcyclists in the summer and by snowmobiles in the winter, and there is no end in sight. So far, we have been unable to get prosecution in Federal Courts for the few we are able to apprehend.

Person or persons unknown broke the padlock on the gate at the main refuge access point on Curtis Road during the night of December 2 to gain access to our secondary headquarters building which was entered after breaking out the door glass. We are not sure what the thieves were after, but the only items missing were a set of socket wrenches, while several hand tools and power tools were left undisturbed. This breaking and entering was investigated by the Michigan State Police without positive results and remains unsolved.

The following violation were prosecuted in state court during the year, but eight cases involving motorcycle and snowmobile trespass are still pending in federal court.

<u>Name</u>	<u>Violation</u>	<u>Court Action</u>
Cochenour, W. H.	Altered hunting license	\$15.00 fine - \$10.00 Costs
Odette, J. R.	Altered hunting license	\$14.00 fine - \$11.00 Costs
Pendelton, R. L.	Hunting on refuge	\$ 6.00 fine - \$ 9.00 Costs

<u>Name</u>	<u>Violation</u>	<u>Court Action</u>
McGee, D. A.	Hunting on refuge	\$ 6.00 Fine - \$ 9.00 Costs
Sivak, D. M.	Hunting on refuge	\$ 6.00 Fine - \$ 9.00 Costs
Chapman, D. R.	Hunting on refuge	\$14.00 Fine - \$11.00 Costs
Webster, F. D.	Hunting on refuge	\$14.00 Fine - \$11.00 Costs
Osmund, K. R.	Hunting on refuge	\$ 6.00 Fine - \$ 9.00 Costs
Pahr, E. A.	Untagged deer	\$ 6.00 Fine - \$ 9.00 Costs
Heiler, W. G.	Hunting on refuge	\$ 5.00 Fine - \$10.00 Costs
Smith, R. M.	Untagged deer	\$ 2.00 Fine - \$ 8.00 Costs

F. Safety.

During the year regular staff safety meetings were held with presentations rotated among personnel as follows:

- January 6 - Reviewed 1968 safety program and general safety discussion. (Frye)
- March 8 - Operation of heavy equipment, starting, etc. field exercise for all personnel conducted by Robinson and Blazo.
- April 7 - Defensive driving. (Robinson)
- May 5 - Use and storage of explosives. (Shelley)
- June 2 - On the job safety. (Blazo)
- July 7 - Use of personal protective equipment and review of personal injury accident. (Frye)
- September 29 - Film "The Final Factor". (Poma)
- December 29 - Federal Tort Claims Act, Motor vehicle operation, winter driving. (Robinson)

The station safety record reached 5,732 days without a lost time accident on May 26. On May 27, 1969, the first lost time accident since establishment of the refuge occurred when Biological Technician Robinson got his left hand caught in the lift arm pulley of the D-7 dozer, crushing his thumb, index finger and third finger. Fortunately there were no broken bones but repairs to the thumb and index finger required plastic surgery.

At the end of the year the safety record now stands at 218 days without a lost time accident.

VII. OTHER ITEMS

A. Personnel.

David I. Hoff, Assistant Refuge Manager since November of 1968 was terminated at the expiration of his one year appointment on November 7. The position has remained vacant to date.

B. Photographs.

All appended photographs were taken with refuge equipment and processed in the office bathroom when it was free.

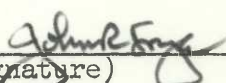
C. Credits.

A concientious all out effort throughout the year by the refuge staff, who continually exhibited excellent dedication and enthusiasm, made 1969 another year of accomplishments. The impossible again was accomplished despite increased work loads due to floods and public hunting programs and shortages of everything but initiative and ingenuity.

My greatful thanks to the crew. Their extra efforts made the impossible only difficult.

SIGNATURE PAGE

Submitted by:


(Signature)

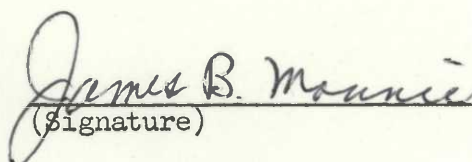
John R. Frye

Refuge Manager

Title

Date: January 27, 1970

Approved, Regional Office:

Date: 1-29-70
(Signature)

ASST.

Regional Refuge Supervisor

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE SHIAWASSEE

MONTHS OF JANUARY TO APRIL, 19 69

(1) Species	Weeks of reporting period ⁽²⁾									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										2
Trumpeter										
Geese:										
Canada									138	1,050
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard									6	40
Black									2	10
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										1
Scaup									2	7
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

3-1750a
 Cont. NR-1
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE SHIAWASSER

MONTHS OF JANUARY TO APRIL, 19 69

		(2) Weeks of reporting period							(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
		11	12	13	14	15	16	17	18	
Swans:										
Whistling		14	830	6000	6000	1200	1200			112,528
Trumpeter										
Geese:										
Canada		2500	11700	30600	30000	22000	6000	3000	1000	865,504
Cackling										
Brant										
White-fronted										
Snow			3		1	1				35
Blue										21
Other										
Ducks:										
Mallard		50	2000	10000	10000	25000	2000	500	500	400,768
Black		20	1000	200	200	300	100	100	100	14,224
Gadwall										
Baldpate			10	20	20					350
Pintail		1	50	5000	5000	800				75,957
Green-winged teal				10		300	100	50	25	3,395
Blue-winged teal			5	20	20	100	100	200	300	5,215
Cinnamon teal										
Shoveler			4			8	10	50	50	854
Wood							10	100	400	3,570
Redhead			2	10	10	10				224
Ring-necked			37	10	2	10	10			413
Canvasback			2	10	10	10				224
Scaup			10	10						203
Goldeneye		10	8							231
Bufflehead			3	10	10	10				231
Ruddy								2	2	28
Other										
Coots:										
				100	100	150	200	200	200	5,959
						(over)				

	(5)	(6)	(7)	
	Total Days Use :	Peak Number :	Total Production :	SUMMARY
Swans	112,528	6,000		Principal feeding areas RAE Crop Units I and II
Geese	865,560	30,600		
Ducks	505,656	26,538		Principal nesting areas
Coots	5,950	200		
				Reported by Refuge Personnel

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)Refuge SHIAWASSEEMonths of JANUARYto APRIL1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Gt. Blue Heron	1	3/22	30	4/30						30
American Bittern	1	4/10	5	4/30						5
Pied-billed Grebe	1	4/9	10	4/30						10
Cattle Egret	1	4/30	1	4/30	1	4/30				1
Sandhill Crane	1	3/30	1	4/8	1	4/8				1
Sora Rail	1	4/30	1	4/30						1
Common Gallinule	4	4/30	4	4/30						4
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	2	3/22	20	4/30						20
Lesser Yellowlegs	2	4/3	10	4/10	10	4/10				10
Ring-billed Gull	25	3/21	100	4/30						100
Herring Gull	4	3/5	20	4/30						20

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	Winter Resident				200
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl	Resident Species				10
Magpie					
Raven					
Crow	30 3/1	200	4/15		200
Bald Eagle	1 2/28	2	4/30		2
Red-tailed Hawk	3 2/9	8	4/30		8
Am. Rough-legged Hawk	Winter Resident	10	March		10
Marsh Hawk	1 2/4	10	4/30		10
Sparrow Hawk	Winter Resident	30	4/30		30
Turkey Vulture	2 4/8	20	4/30		20
Reported by <u>Refuge Personnel</u>					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acres of habitat	Acres Per Brood	Number broods observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Range	Pertinent information not specifically requested.
Common Name Pheasant	8000 ac. upland, 800 bottomland hardwoods, and marshes									Est. 10 pheasants on area birds rarely seen.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge SILVASSIE Year ending April 30, 1969

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
								Permit Number	Trappers Share	Refuge share				
Cottontail Rabbit	8000 ac. Croplands, bottomland hardwoods, and marshes													Unknown
Fox Squirrel	" " "													Unknown
Red Squirrel	" " "													Unknown
Oppossum	" " "			3										30
Raccoon	" " "			3	16									50
Striped Skunk	" " "			1										10
Woodchuck	" " "				14									50
Muskrat	1000 ac. Cattail marsh, rivers, and drainage ditches			748 482 491				T-9934 T-9935 T-9936	449 209 295	299 193 196	299 193 196			3,000
Beaver	" " "				4									50
Mink	" " "												1	Unknown
Weasel	" " "													Unknown

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Reported by Refuge Personnel

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
 - (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
 - (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
 - (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
 - (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

REFUGE GRAIN REPORT

Refuge SHIAWASSEEMonths of JANUARY through APRIL, 1969

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Corn	1350	-	1350	-	-	100	100	1250		1250	

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge Granary _____

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

WATERFOWL

REFUGE SITAWASSEE

MONTHS OF MAY TO AUGUST, 19 61

(1) Species	Weeks of reporting period ⁽²⁾									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling	1000	1100	1100	1100	1100	1100	1100	1100	1100	1100
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black	500	500	300	300	300	300	300	300	300	300
Gadwall	100	100	50	50	50	50	50	50	50	50
Baldpate										
Pintail										
Green-winged teal	10	10	10							
Blue-winged teal	25									
Cinnamon teal	300	300	300	300	300	300	300	300	300	300
Shoveler										
Wood	50	25	10	10	10	10	10	10	10	10
Redhead	400	400	400	400	400	400	400	400	400	400
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	200	200	200	200	200	200	200	200	200	200

(Continuation Sheet)

REFUGEE **SHRIAWASTEE** MONTHS OF **MAY** TO **AUGUST**, 19 **69**

(over)

(5)			(6)			(7)			SUMMARY		
Total Days Use			Peak Number			Total Production					
Swans									Principal feeding areas		
Geese			1100			100			Pools 1 and 2; Farm Units No.		
Ducks			11850			300			1, 3, and 4		
Coots			300			100			Principal nesting areas		
									Pools 1 and 2		
									Reported by		
									Refuge Personnel		

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)Refuge SWILWASSEE Months of MAY to AUGUST 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Pied-billed Grebe			10	8/31						10
Great Blue Heron			50	8/31						50
Green Heron			20	8/31						20
Common Egret			16	8/28						16
Cattle Egret	1	5/11	1	5/29	1	5/29				1
American Bittern			10	8/31						10
Bl.-Crowned Night Heron			40	8/31						40
Sora Rail			10	8/31						10
Common Gallinule			20	8/31						20
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer			50	August						50
Semi-palmated Sandpiper			150	August						150
Greater Yellowlegs			30	August						30
Ring-billed Gull			50	August						50
Common Tern			30	July						30
Black Tern			50	July						50

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons: Mourning dove White-winged dove		200	August		200
IV. Predaceous Birds: Golden eagle Duck hawk Horned owl Magpie Raven Crow Bald Eagle Red-tailed Hawk Marsh Hawk Sparrow Hawk Turkey Vulture	Resident				
		50	August		50
		3	July		3
		20	August		20
		10	August		10
		30	August		30
		40	July		40
Reported by.....					Refuge Personnel

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge SHIWAUSSKI For 12-month period ending August 31, 19 69

Reported by J.R. Frye Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production
<u>UNIT I</u>	Crops <u>3,082</u>	Ducks <u>5,010,369</u>	<u>300</u>	<u>300</u>
	Upland <u>366</u>	Geese <u>2,152,082</u>	<u>1000</u>	<u>100</u>
	Marsh <u>1,179</u>	Swans <u>112,962</u>		
	Water <u>192</u>	Coots <u>44,840</u>	<u>800</u>	<u>100</u>
	Total <u>4,819</u>	Total <u>7,319,653</u>	<u>1500</u>	<u>500</u>
.....	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
.....	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
.....	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
.....	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
.....	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
.....	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		

(over)

UNITED STATES
3-1750
Form NR
(December)
Refuge
Reported by

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August narrative report.

INSTRUCTIONS

- (1) **Area or Unit:** A geographical unit that, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. Estimated acreage of each unit should be indicated.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type including wet meadow and deep marsh; and the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven.
- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.
- (5) **Production:** Estimated total number of young raised to flight age.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge SHIAWASSEE

Months of MAY to AUGUST, 1969

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	8000 ac.. Croplands bottomland hardwoods and marshes	800	0	0					10	Rarely observed on refuge

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

WATERFOWL

REFUGE SHIAWASSEE

MONTHS OF SEPTEMBER TO DECEMBER, 19 69

(1) Species	Weeks of reporting period ⁽²⁾									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling									53	
Trumpeter										
Geese:										
Canada	1,100	1,950	3,500	7,800	11,300	15,700	24,500	25,000	26,700	31,000
Cackling										
Brant										
White-fronted										1
Snow				1	1	2	80	2,000	500	1,000
Blue						4	320	5,000	2,000	5,000
Other										
Ducks:										
Mallard	9,100	14,300	23,600	26,200	32,400	33,000	34,500	42,000	56,000	76,000
Black	2,200	3,000	3,200	3,600	4,000	5,500	5,500	6,000	6,000	8,000
Gadwall										
Baldpate	200	200	300	300	300	200	100	200	200	100
Pintail		50	100	300	200	200	200	200	100	100
Green-winged teal	100	400	550	700	500	300	200	100	100	
Blue-winged teal	600	700	700	700	300	200				
Cinnamon teal										
Shoveler	50	100	100	100	100	50				
Wood	600	600	600	600	600	600	400	400	400	300
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	300	200	200	200	200	200	200	200	300	200

(Rev. March 1953)

(Continuation Sheet)

MONTHS OF ~~SEPTEMBER~~ TO ~~DECEMBER~~ , 19. 69

[illegible]

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	371	51		Principal feeding areas <u>Refuge croplands</u>
Geese	1,910,055	17,000		
Ducks	4,517,800	22,000		Principal nesting areas
Coots	16,170	300		
				Reported by <u>Refuge Personnel</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)Refuge. SHANASSIE REFUGEMonths of SEPTEMBER to DECEMBER 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Pied-billed Grebe			20	Sept.	1	Oct 30				20
Great Blue Heron			50	Sept.	11	Dec 5				50
Green Heron			20	Sept.	1	Oct.				20
Common Egret			16	Sept.	4	Nov 17				16
American Bittern			20	Sept.		Oct.				20
Black-cr. Night Heron			40	Sept.		Sept.				40
Sora Rail			10	Sept.		Sept.				10
Common Gallinule			20	Sept.	2	Oct 30				20
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer			50	Sept.		Nov.				50
Yellowlegs			30	Sept.		Sept.				30
Ring-billed Gull			200	Dec.	Still present					200
Herring Gull			50	Dec.	Still present					50

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove		300	Sept.	Still present	300
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl	Resident Species				20
Magpie					
Raven					
Crow		200	Sept.	8 Dec 7	200
Bald Eagle	Winter Resident	2			2
Marsh Hawk		20	Sept.	1 Dec 14	20
Red-tailed Hawk		20	Sept.	1 Dec 29	20
Am. Hough-legged Hawk	1 Nov 14	4	Dec.	Winter resident	4
Turkey Vulture		30	Sept.	2 Oct.	30
Sparrow Hawk		30	Sept.	Still present	30
Reported by <u>Refuge Personnel</u>					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge SHIAWASSEE REFUGE

Year 1969

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/1-7	301	1,538	39 Canada geese	39		39	301	39
10/8-14	213	1,024	15 Canada geese	15		15	213	15
10/15-21	255	1,224	23 Canada geese	23		23	255	23
10/22-28	219	1,040	10 Blue geese, 4 snow geese, 3 Canada geese	17		17	219	17
10/29-11/4	220	1,169	3 Canada geese, 1 blue goose	4		4	220	4
11/5-11	221	1,207	6 Canada geese, 4 blue geese, 1 snow goose	11		11	221	11
11/12-14	32	175	11 Blue geese, 4 Canada geese	15		15	32	15
TOTALS:	1,461	7,377	93 Canada geese, 26 Blue geese, and 5 Snow geese	124		124	1,461	124

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURV

Refuge SHIAWASSEE REFUGE (BLINDS OPERATED BY MICH. DEPT. OF NATURAL RESOURCES)

Year 1969

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/1-7	62	205	15 Canada geese	15	1	16	62	16
10/8-14	32	75	17 Canada geese	17	2	19	32	19
10/15-21	36	115	3 Canada geese	3	1	4	36	4
10/22-28	24	88	4 Canada geese, 2 Blue geese	6	2	8	24	8
10/29-11/4	14	39	3 Canada geese	3		3	14	3
11/5-11	18	60	0	0		0	18	0
11/12-14	4	12	2 Canada geese	2		2	4	2
TOTALS:	190	595	44 Canada geese, 2 Blue geese	46	6	52	190	52

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge SHIAWASSEE REFUGE Months of SEPTEMBER to DECEMBER, 1969

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Croplands, bottom- land hardwoods & marsh - 8,000 ac.	800	0	0					10	Only rarely observed.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge SHIAWASSEE REFUGE

Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	Bottomland hardwoods, croplands, marsh - 8,000 ac.	300	205						10			1,000	500	1:4

Remarks: Estimated removals by hunting include 80 taken during firearms season, 75 during archery season, and an estimated 50 illegal and/or unretrieved kills.

Reported by Refuge Personnel

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge SHIAWASSEE REFUGE

Year 19 69

Botulism

Period of outbreak NONE

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
---------------------	---------------	-------------

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease Lead Poisoning

Species affected Whistling Swan

Number Affected	Actual Count	Estimated
Species		
<u>Whistling Swan</u>	_____	<u>20</u>
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost estimated 20

Source of infection Presumed on wintering area.

Water conditions _____

Food conditions _____

Remarks Each year a small loss of swans is recorded during the spring migration. It is presumed the lead is ingested on the wintering area and birds weaken and die enroute to the nesting grounds.

3-1757
Form NR-7
(Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Shiawassee

Year 19 69

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
							Farm Unit 111	10 lbs per acre	¹ 50 acres	Brome grass, tall fescue, ryegrass mixture	Nov.		
							Pool 3 Dikes	10 lbs per acre	² 35 acres	Brome grass, tall fescue, ryegrass & ladino clover mixture	June	80%	Brought

- (1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Remarks: 1. Seeding of retired croplands to permanent grass.
2. Seeding newly constructed dike for erosion control

Total acreage planted:

Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge SHIAWASSEE REFUGE County SAGINAW State MICHIGAN

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Field Corn	322	31,139	21	1,840	133	11,478	476	Ryegrass in corn	193
White Beans	909	25,538	-	-	-	-	909	Clover w/ sm. grains	488
Soybeans	337	10,386	-	-	17	438	354	Wheat/Rye/Oats Browse	419
Barley	37	1,150	-	-	322	14,490	359	Winter wheat	152
Winter Wheat	72	3,816	-	-	57	3,021	129		
Oats/Alfalfa	20	30 tons	-	-	10	600	30		
Buckwheat	-	-	-	-	116	5,600	116		
Millet	-	-	-	-	147	7,400	147		
Sugar Beets	173	3,469 tons	-	-	13	199 tons	186		
								Fallow Ag. Land (not farmed because of wet conditions)	271

No. of Permittees: Agricultural Operations 17 Haying Operations 0 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,978
Hay - Wild				2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge SHIAWASSEE REFUGE

Months of May through December, 1969

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Corn	1,250	1,840	3,090	900	-	850	1,750	1,340	-	1,000	340

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge secondary headquarters granary.

(10) Remarks surplus for transfer to Seney Refuge.

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

TIMBER REMOVAL

Refuge... SHILAWASSEE REFUGE Year 1966

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
None during year								

Total acreage cut over.....

Total income.....

No. of units removed B. F.

Method of slash disposal.....

Cords.....

Ties.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

Refuge

SHIAWASSEE

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 19 to July 3	Willow, Cottonwood, Canada thistle, Nettles, Poison ivy	All dikes, road ditches, drainage ditches and ditch banks, Nature trail	36	2,4-D / 2,4,5-T mixture	70 lbs.	2 lbs/acre (s.i.)	Water 6 pts. chemical per 125 gals.	Tractor-powered broadjet sprayer.

10. Summary of results (continue on reverse side, if necessary) 80% kill of woody species with 10% regrowth; 90% top kill on broad-leaf species with 50% regrowth; 100% kill on nettles and poison ivy with no regrowth.



Jack Frye
Refuge Mgr.



Sam Poma
Refuge Clerk



Larry Blazo
Operator Gen.



Louis Robinson
Biological Tech.



Ken Shelley
Operator Gen.



Photo No. 69-150; 05-12-69; JRF
Flood waters starting to over-
top the south dike of Pool 2.
Pool 2 on right - Farm Unit 3
on left.

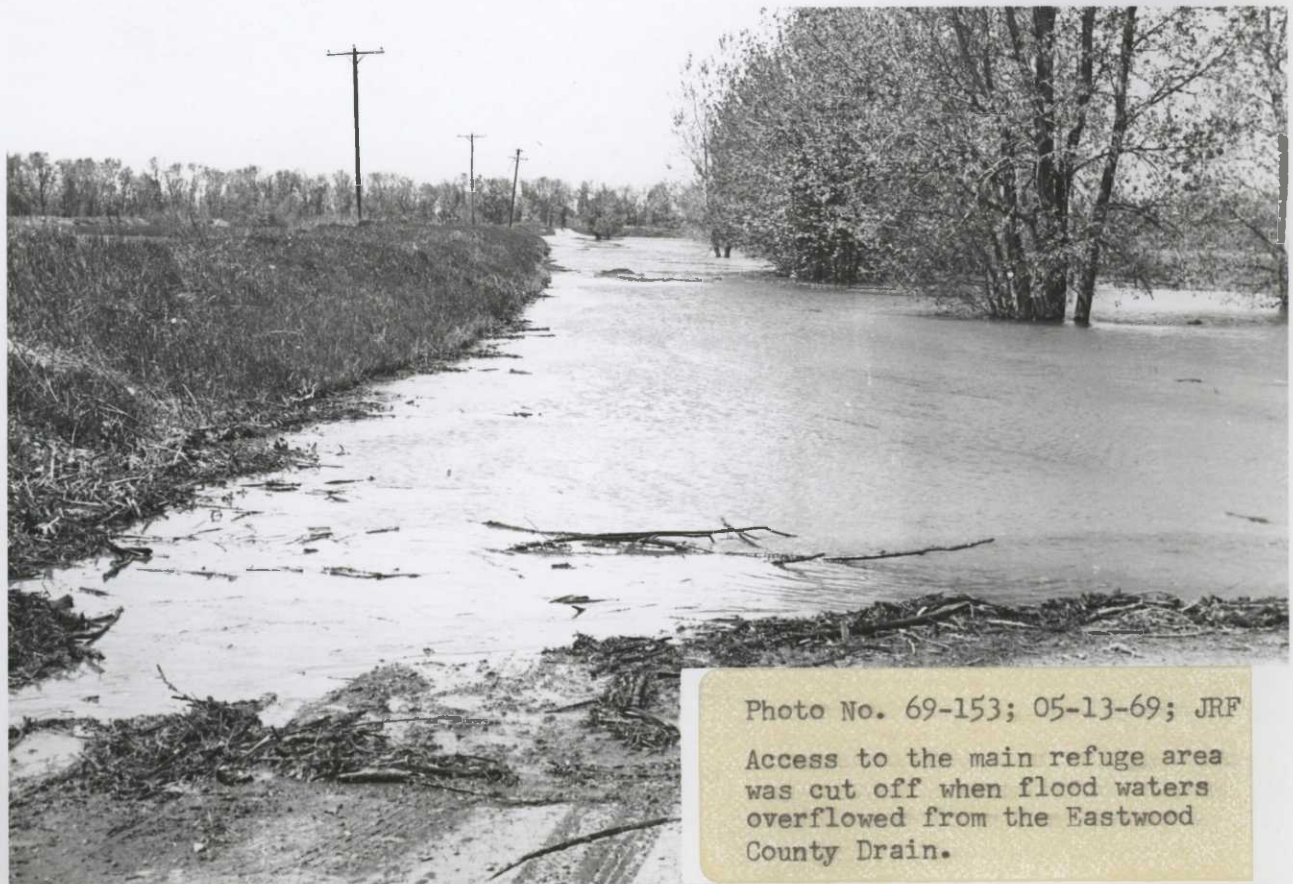


Photo No. 69-153; 05-13-69; JRF
Access to the main refuge area
was cut off when flood waters
overflowed from the Eastwood
County Drain.

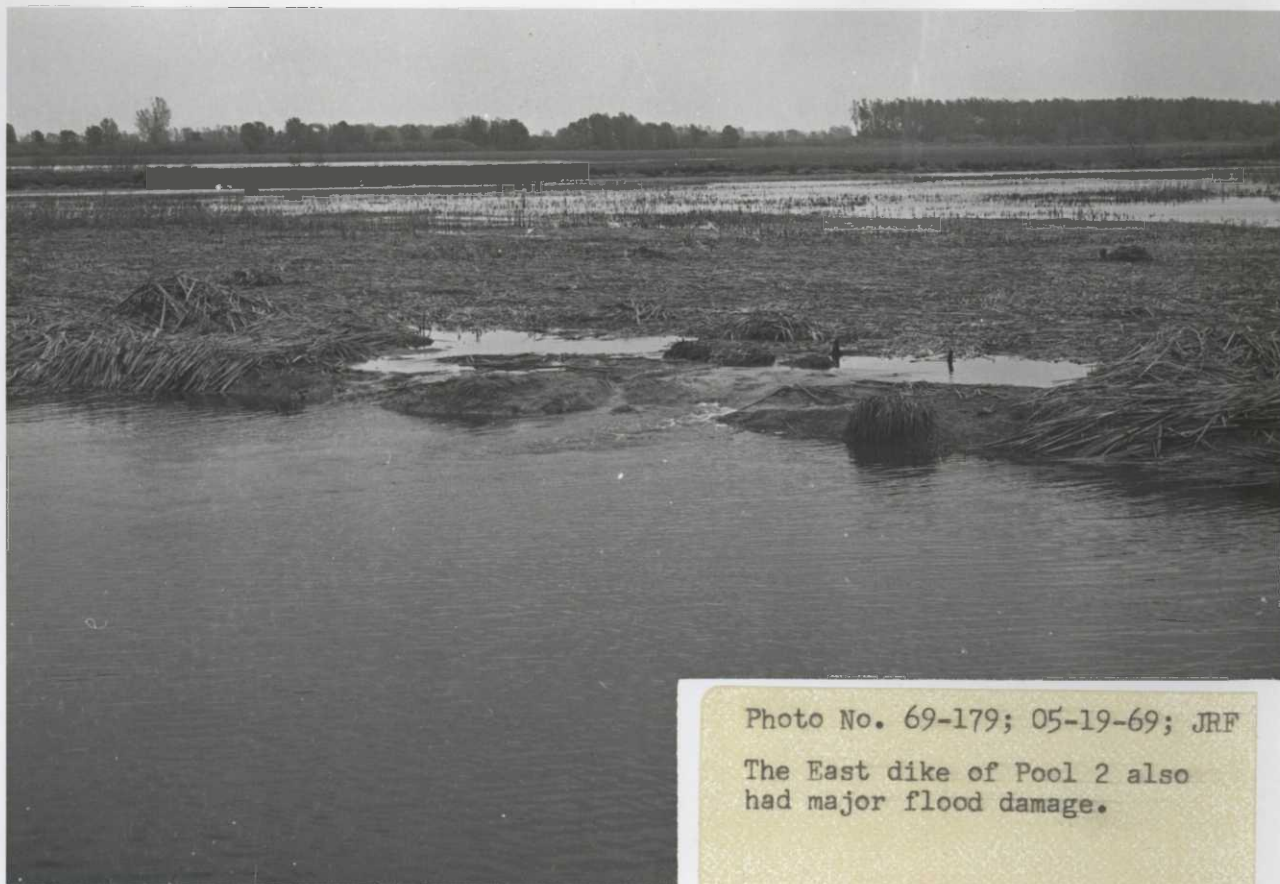


Photo No. 69-179; 05-19-69; JRF
The East dike of Pool 2 also
had major flood damage.

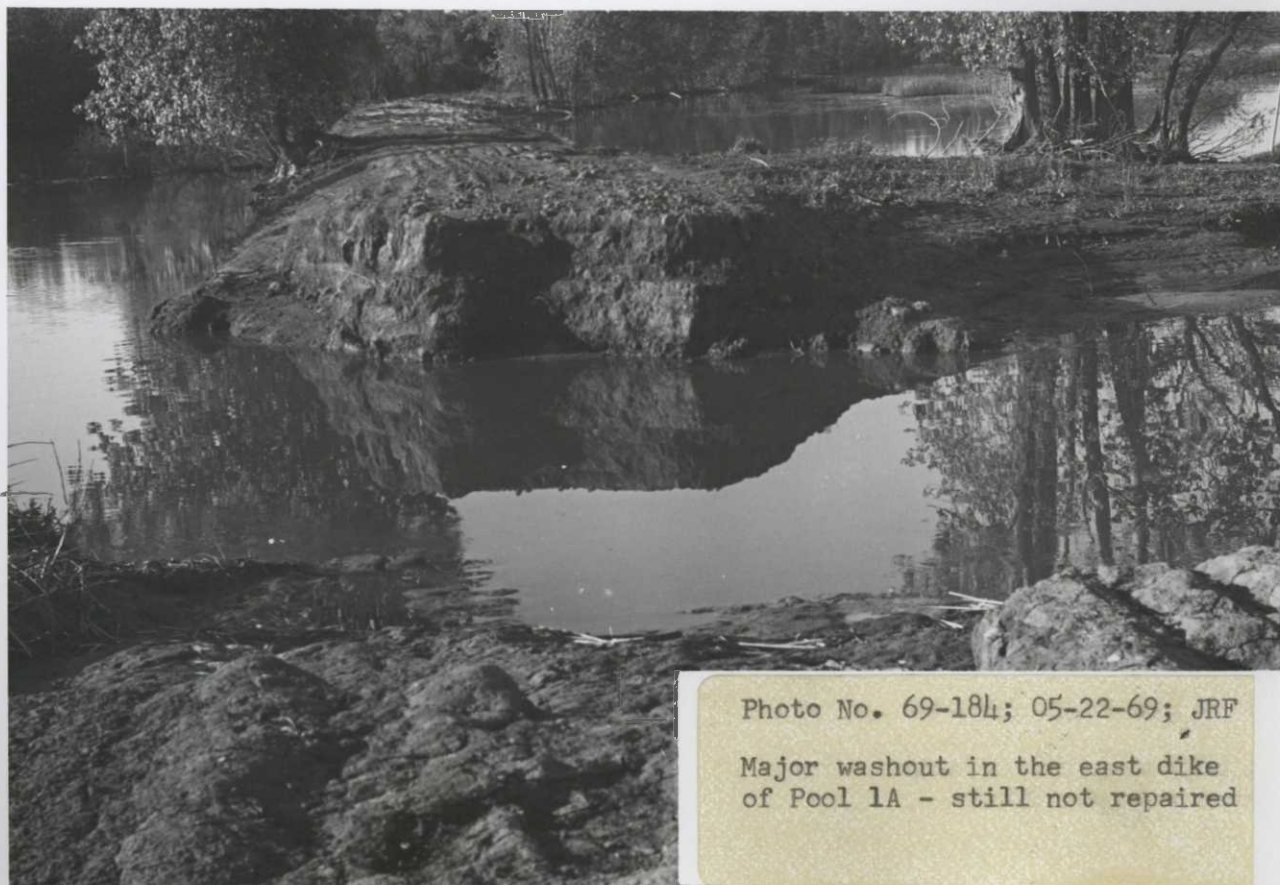


Photo No. 69-184; 05-22-69; JRF
Major washout in the east dike
of Pool 1A - still not repaired



Photo No. 69-152; 05-12-69
69-155; 05-13-69

An attempt was made to blade
up a levee to prevent flooding
of Farm Units 3 and 4.

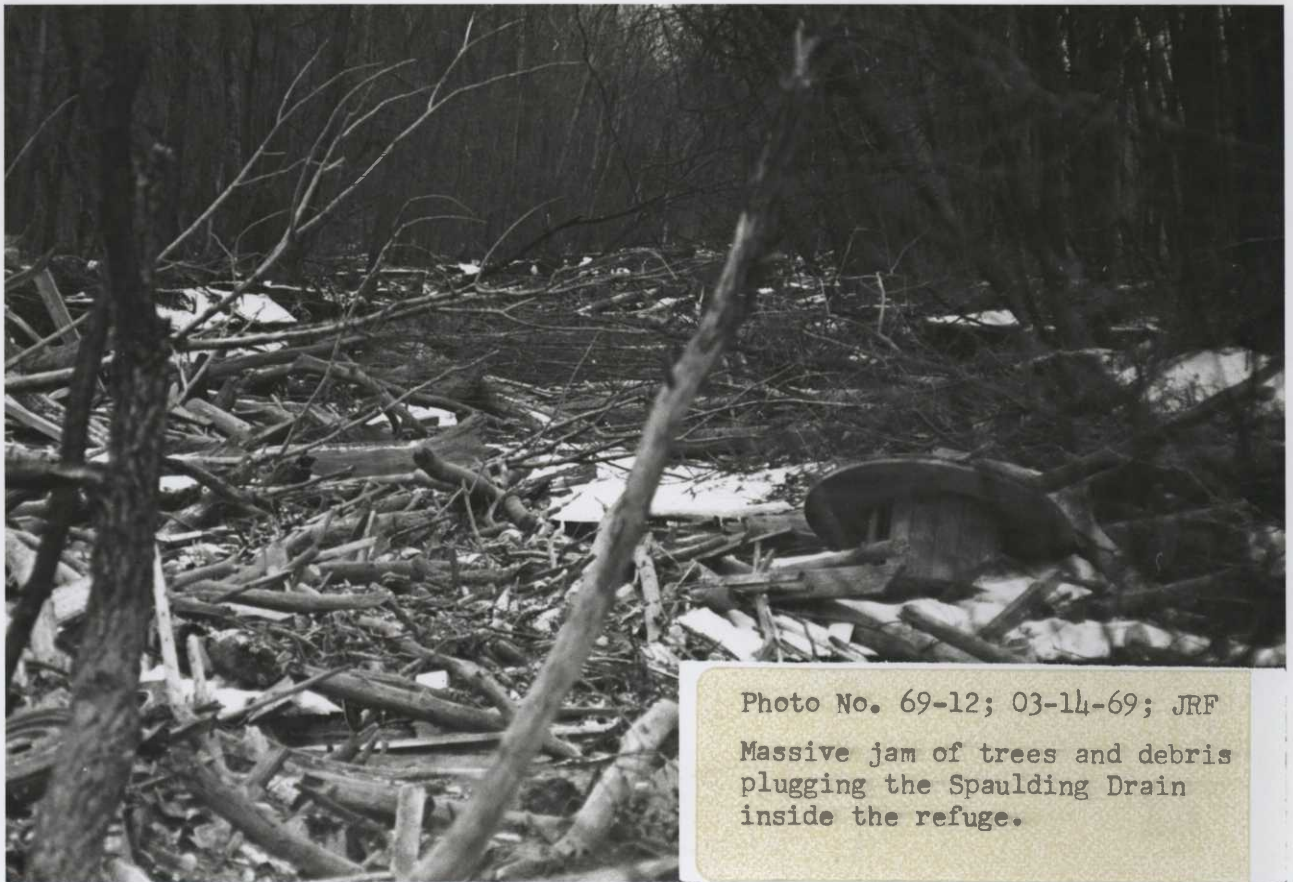


Photo No. 69-12; 03-14-69; JRF
Massive jam of trees and debris
plugging the Spaulding Drain
inside the refuge.

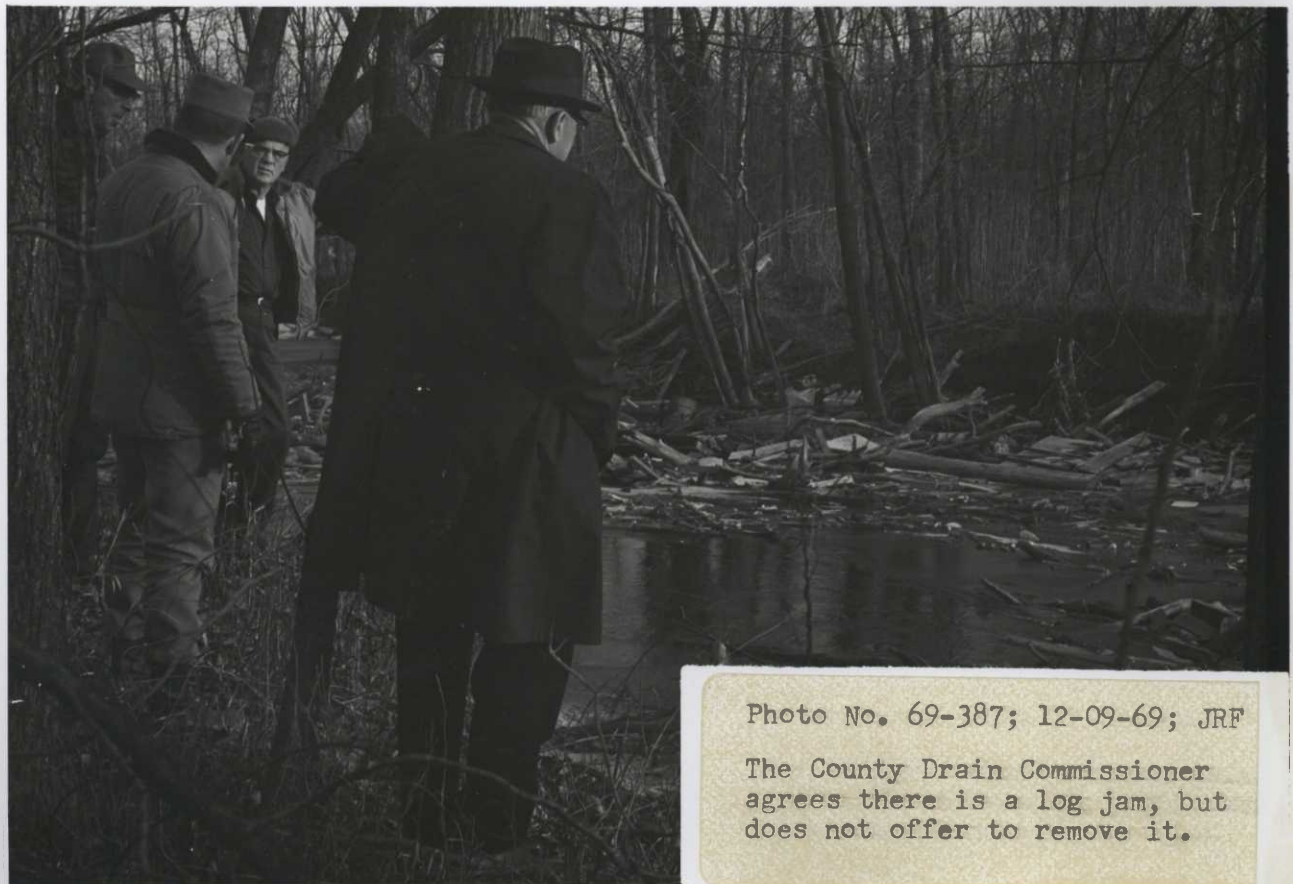


Photo No. 69-387; 12-09-69; JRF
The County Drain Commissioner
agrees there is a log jam, but
does not offer to remove it.



Photo No. 69-16; 03-18-69; JRF

Flooded croplands prove very attractive to geese during the spring migration.

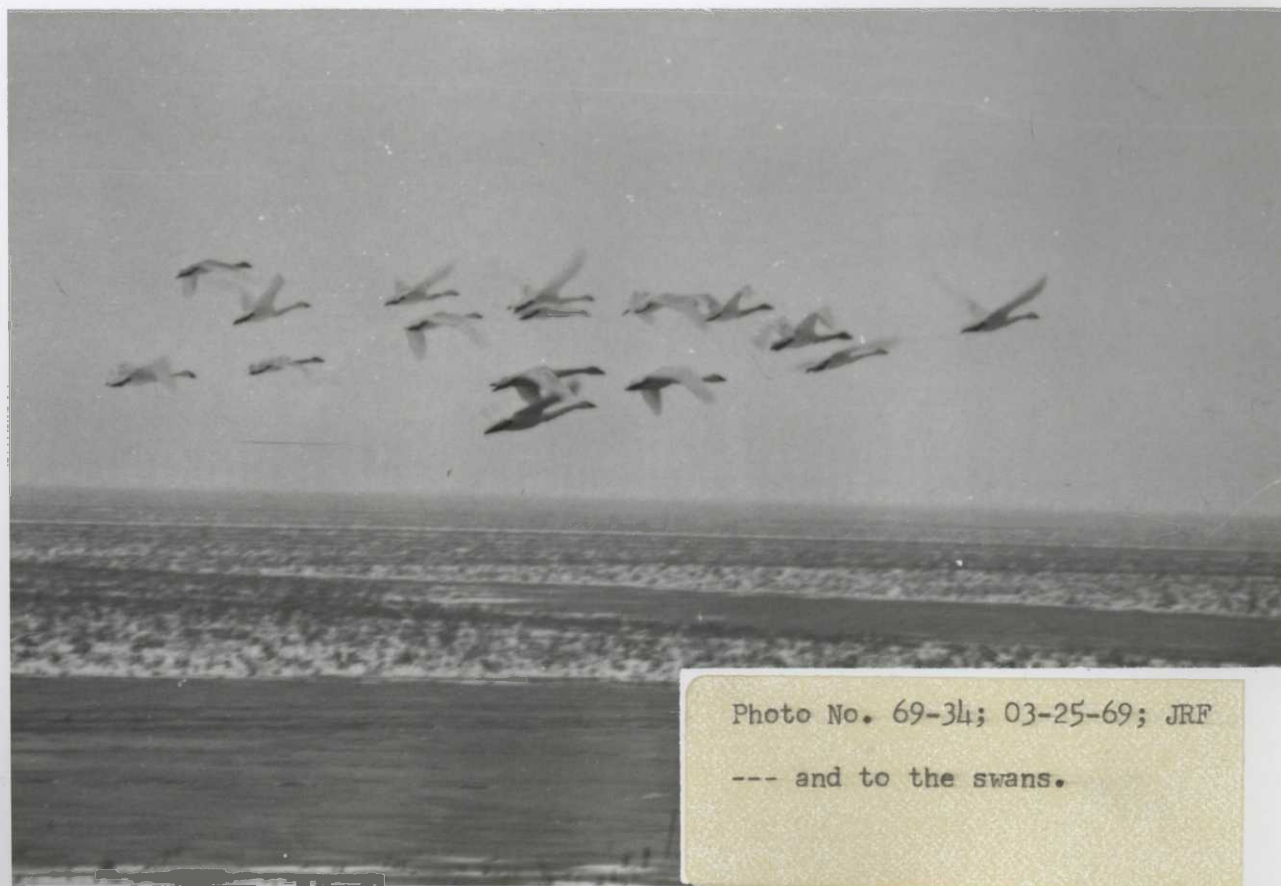


Photo No. 69-34; 03-25-69; JRF

--- and to the swans.



Photo No.69-31; 03-25-69; JRF

Geese and swans feed quite extensively in flooded corn stubble in the spring.



Photo No. 69-122; 04-08-69; JRF

Swans also utilize corn in dry fields.

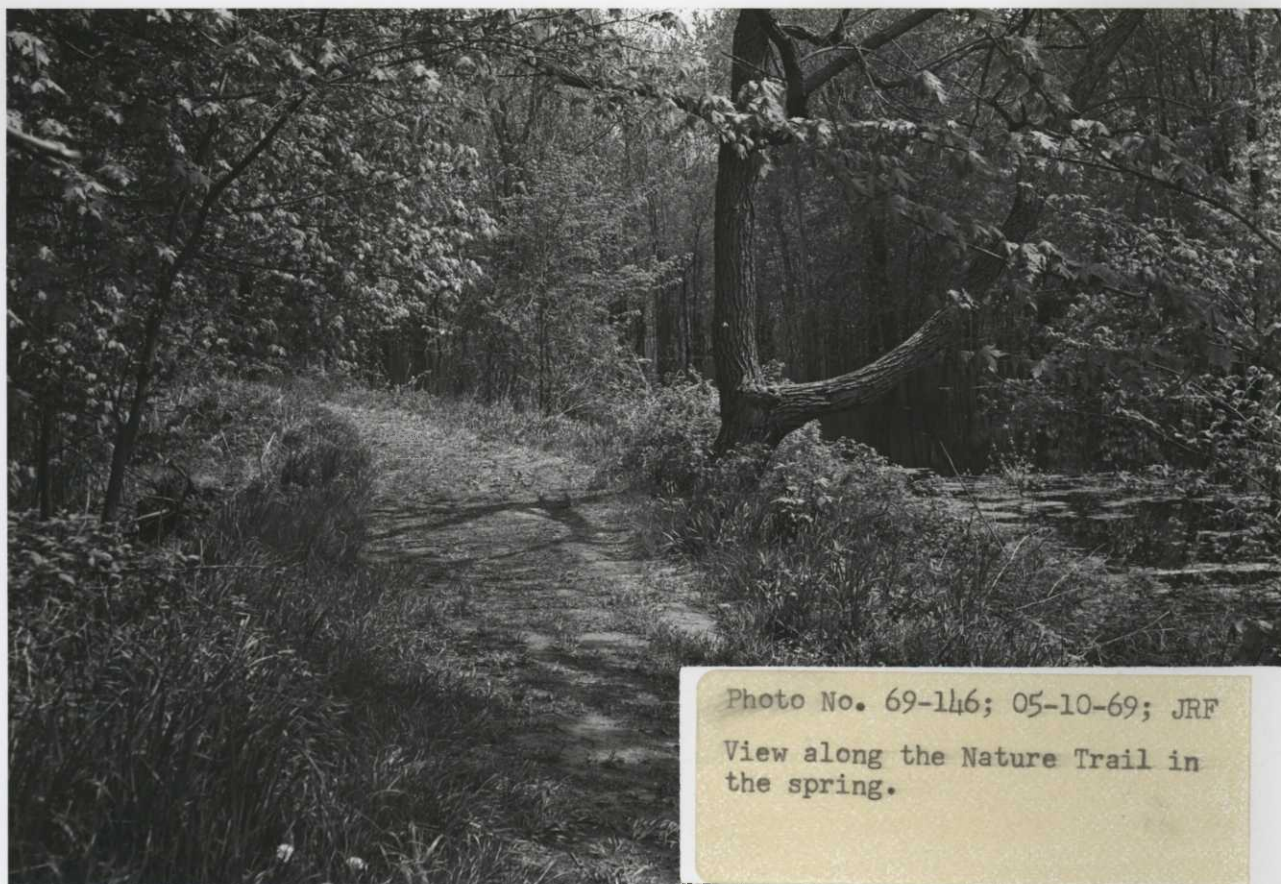


Photo No. 69-146; 05-10-69; JRF
View along the Nature Trail in
the spring.

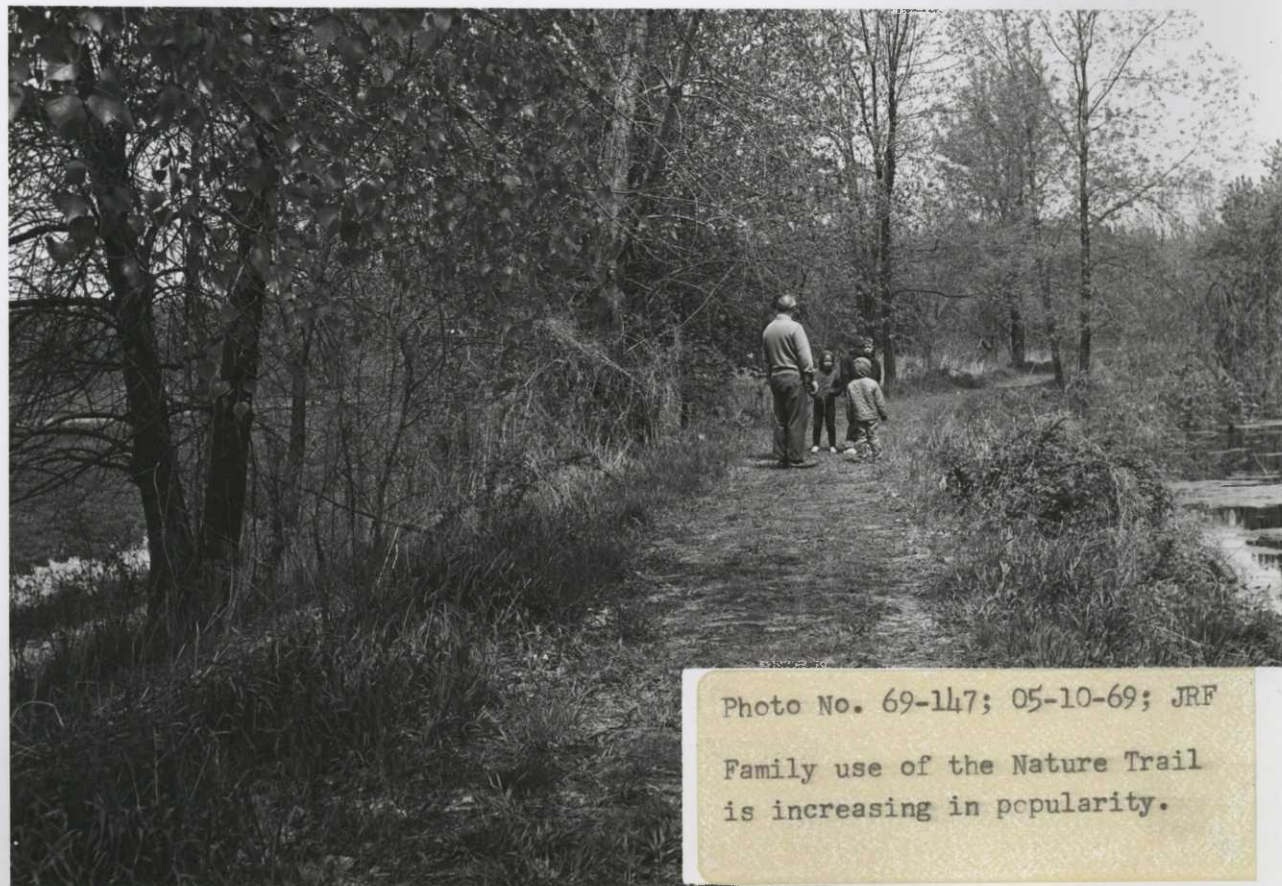


Photo No. 69-147; 05-10-69; JRF
Family use of the Nature Trail
is increasing in popularity.



Photo No. 69-41; 03-23-69; JRF

The geese usually cooperate for people during the spring tours.



Photo No. 69-124, 04-12-69; JRF

The Lansing Audubon Club on their spring field trip.

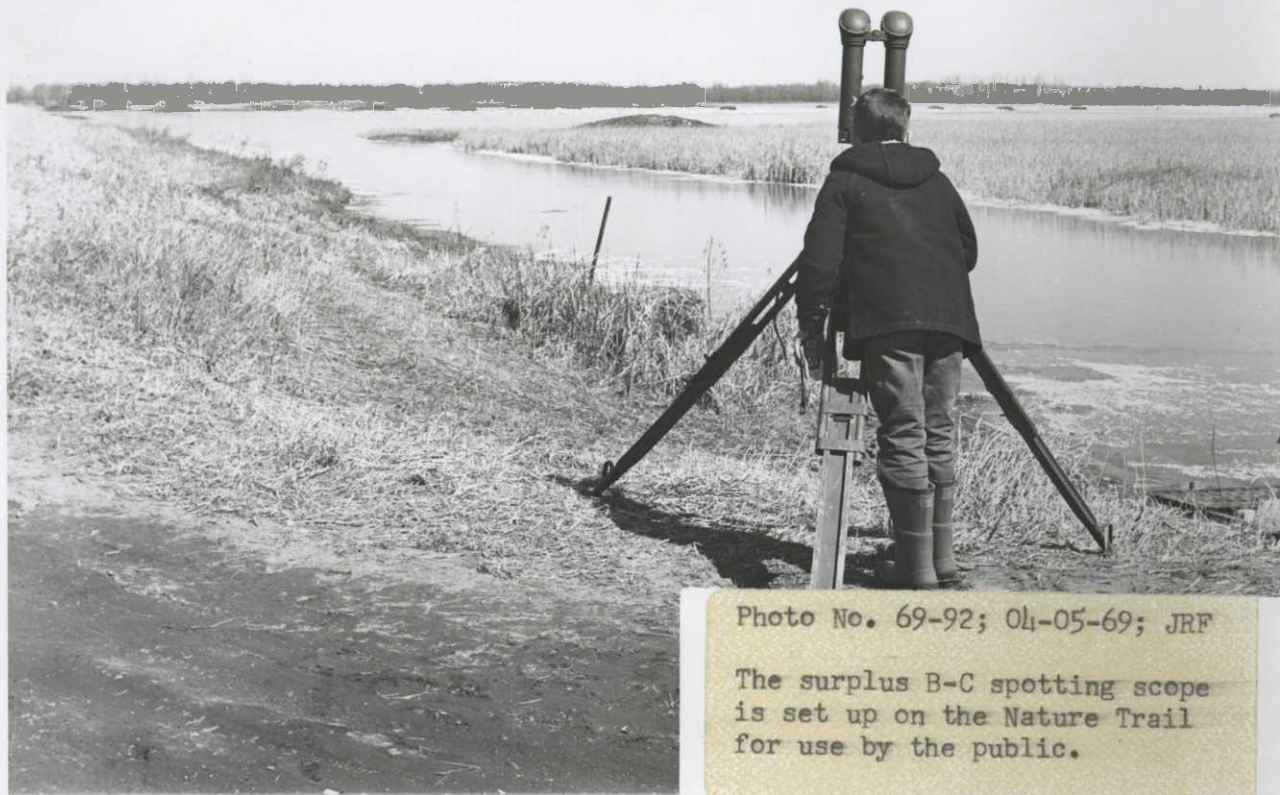


Photo No. 69-92; 04-05-69; JRF

The surplus B-C spotting scope is set up on the Nature Trail for use by the public.



Photo No. 69-100; 04-07-69; JRF

The tripod for the B-C scope was replaced with a permanent mount.

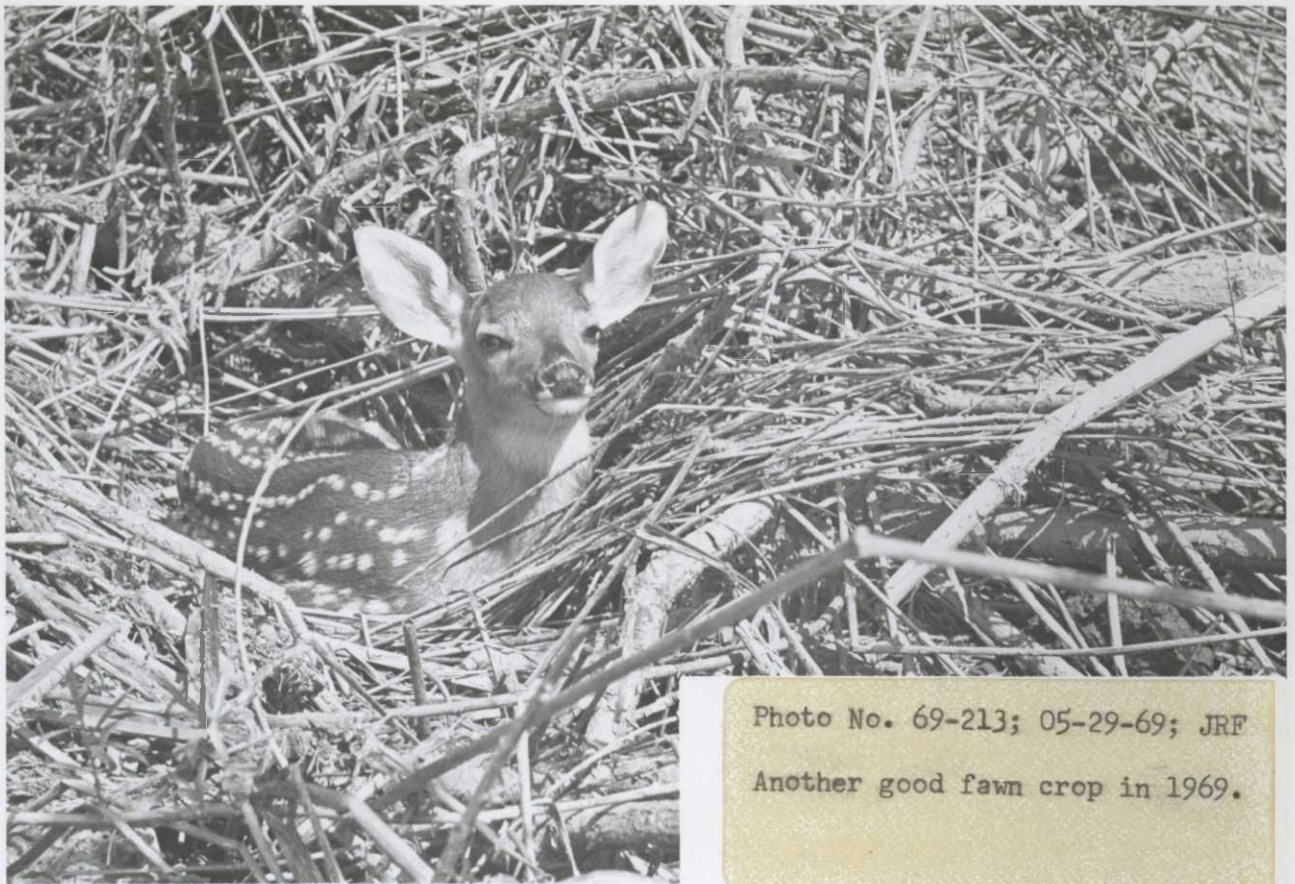


Photo No. 69-213; 05-29-69; JRF
Another good fawn crop in 1969.



Photo No. 69-259; 08-18-69; JRF
Hows the fishing?



Photo No. 69-263; 08-24-69; JRF

The Michigan State Highway Dept.
set up signs for us on M-13.

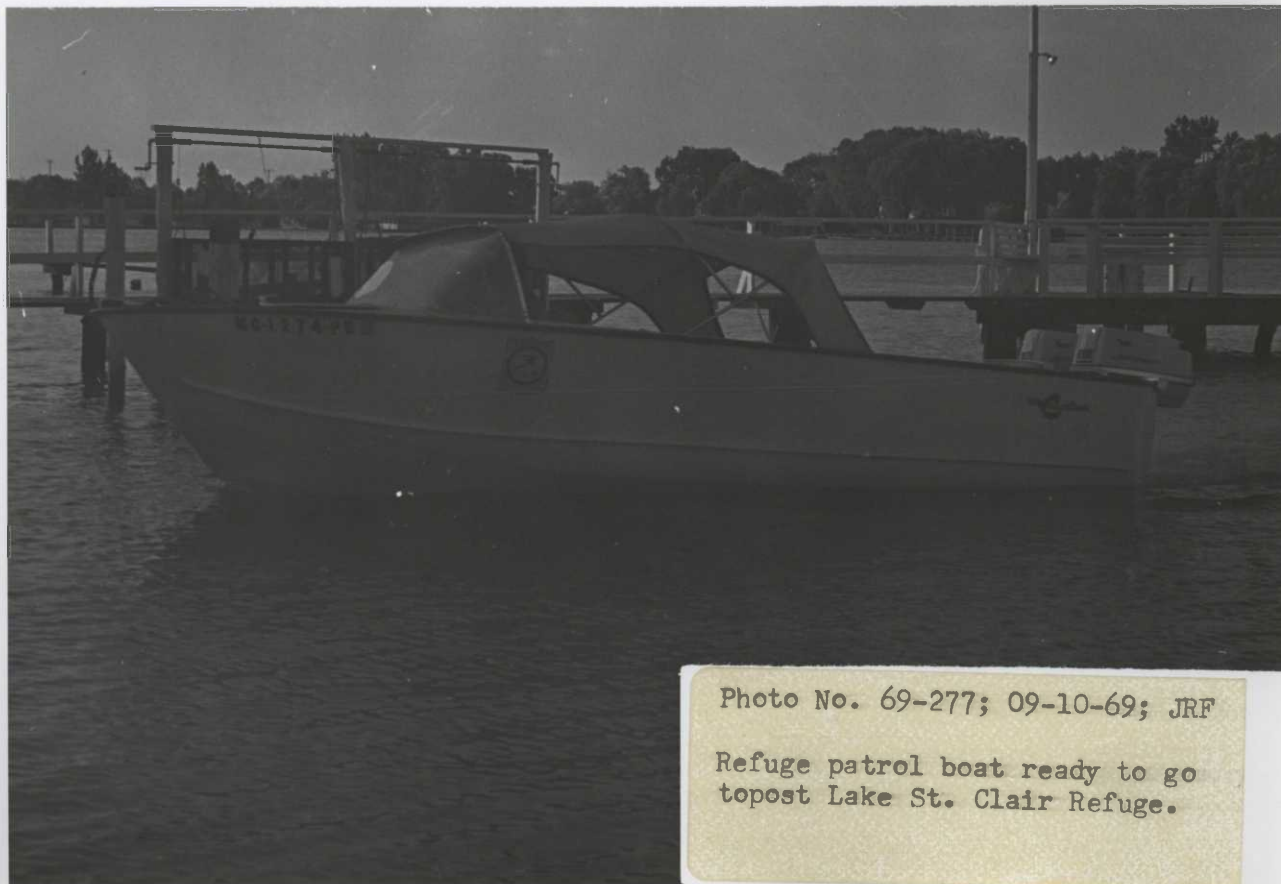


Photo No. 69-277; 09-10-69; JRF

Refuge patrol boat ready to go
topost Lake St. Clair Refuge.



Photo No. 69-253; 08-11-69; JRF

Repairs to farm pumps is a continuing maintenance job.

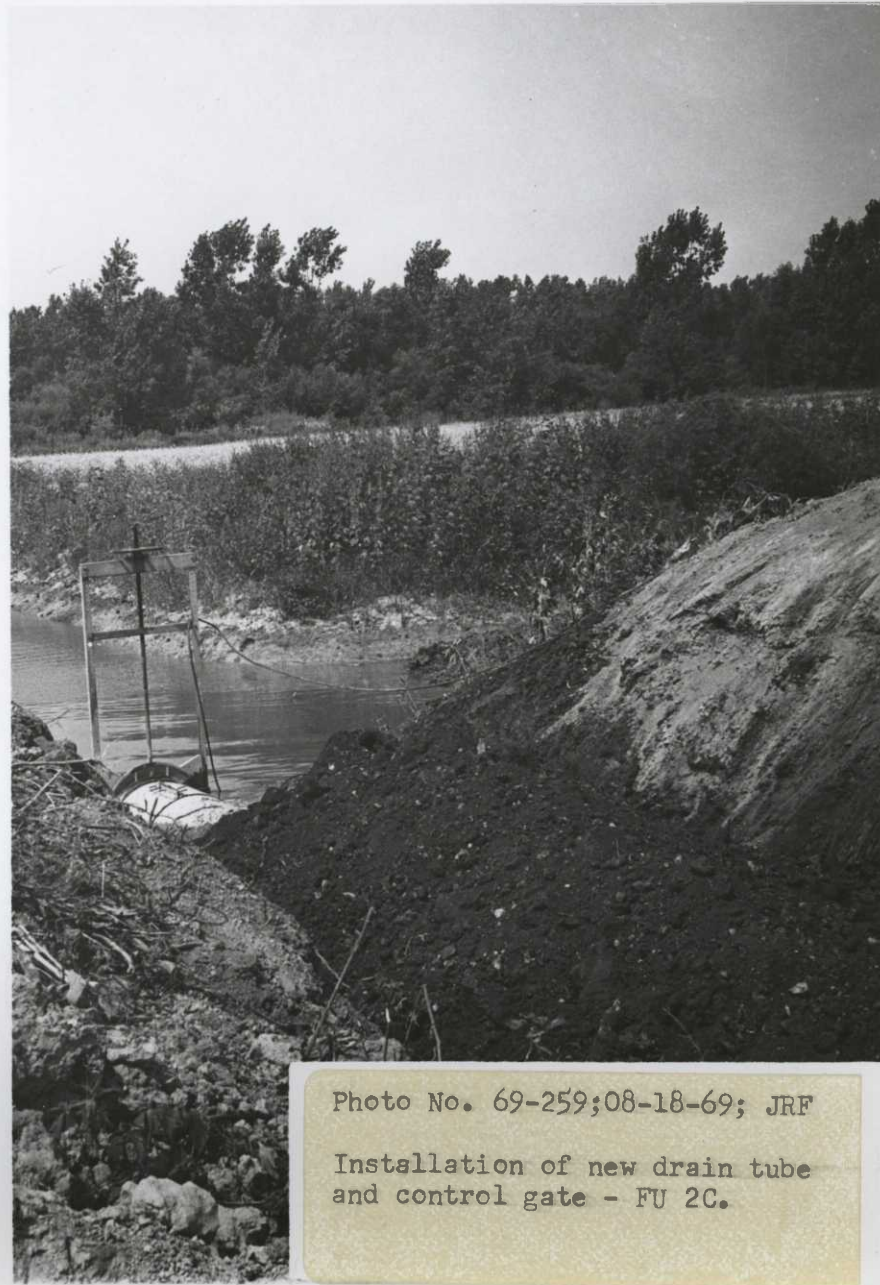


Photo No. 69-259; 08-18-69; JRF

Installation of new drain tube and control gate - FU 2C.

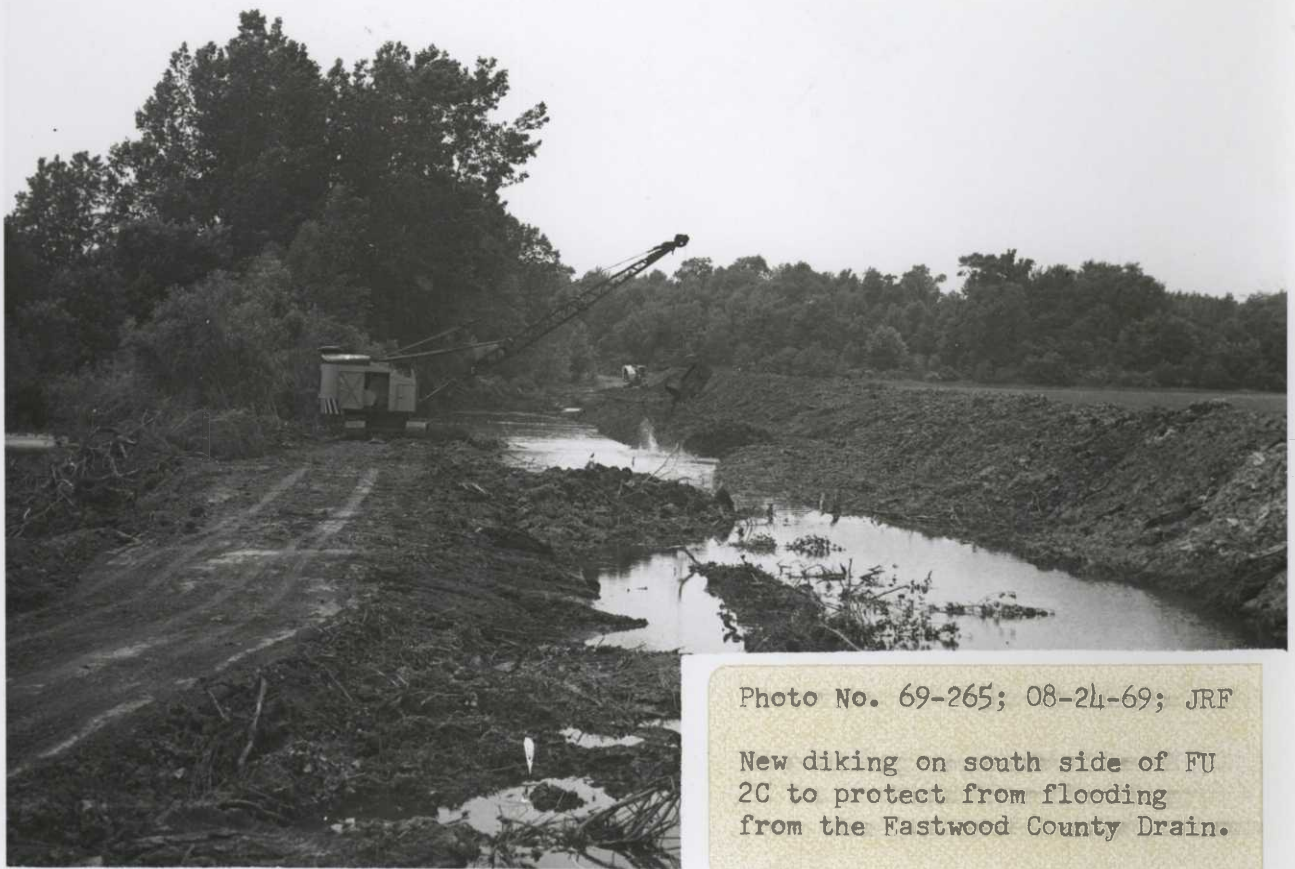


Photo No. 69-265; 08-24-69; JRF

New dike on south side of FU
2C to protect from flooding
from the Eastwood County Drain.



Photo No. 69-272; 09-02-69; JRF

New dike constructed on west
side of Farm Unit 9D.



Photo No. 69-295; 10-10-69; JRF

Canada geese flying into Farm
Unit 8 buckwheat field.

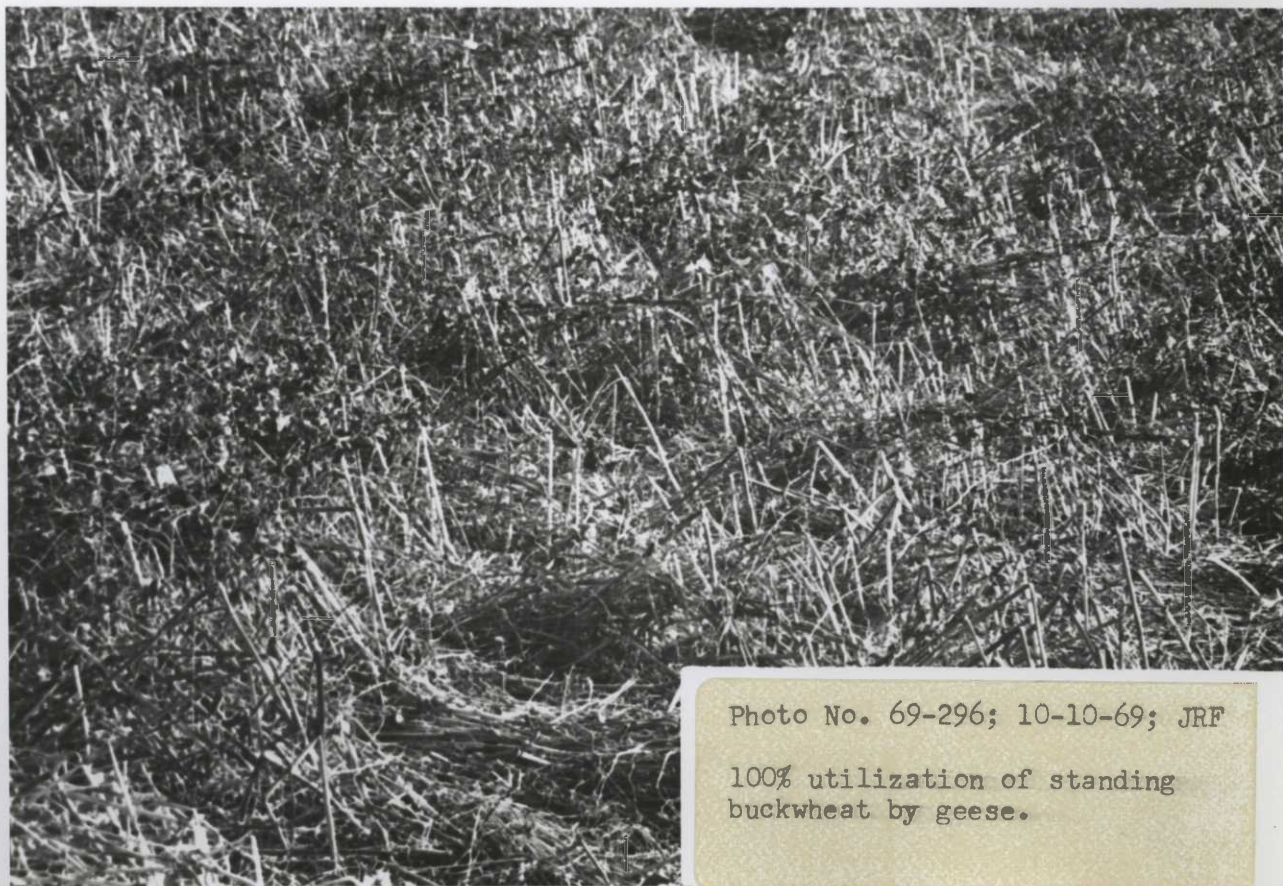


Photo No. 69-296; 10-10-69; JRF

100% utilization of standing
buckwheat by geese.

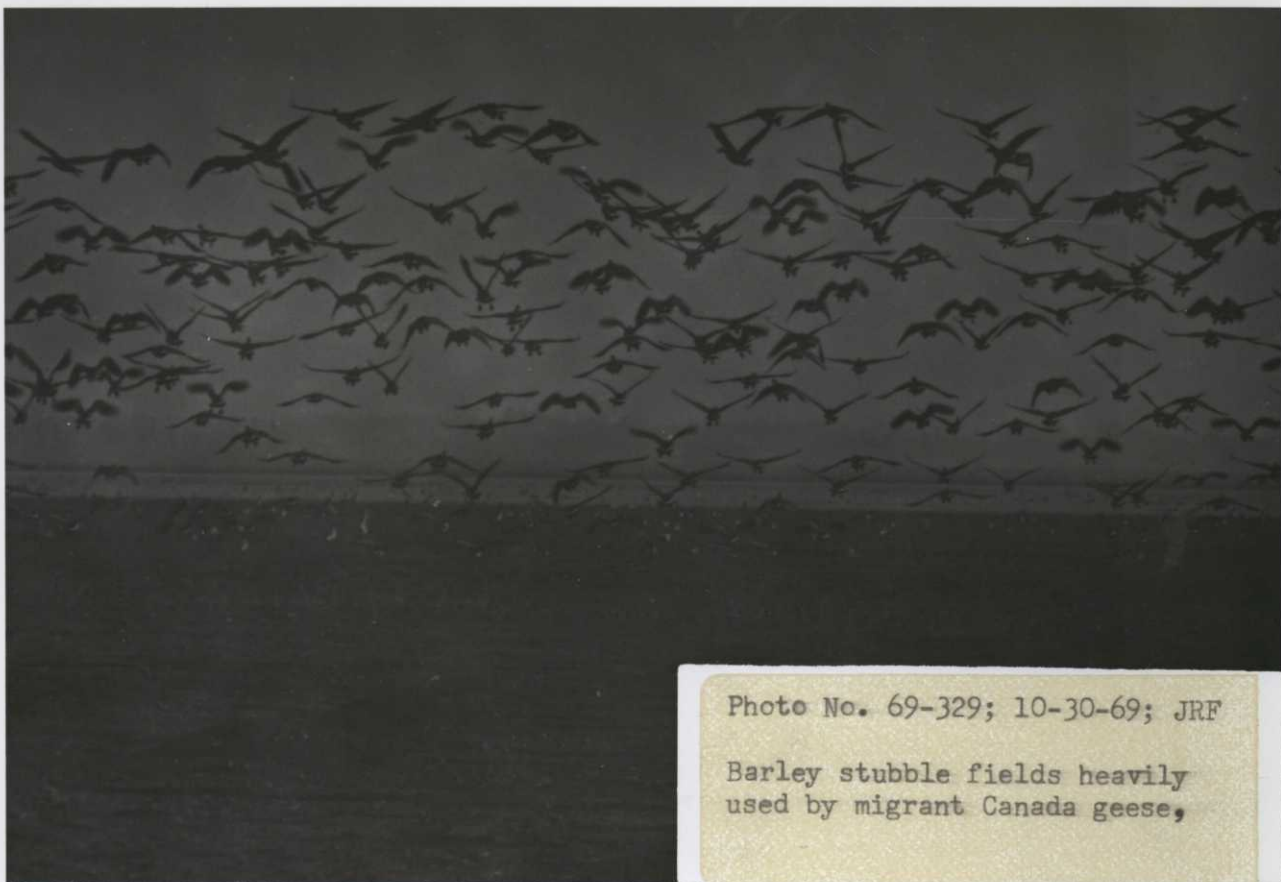


Photo No. 69-329; 10-30-69; JRF

Barley stubble fields heavily
used by migrant Canada geese,

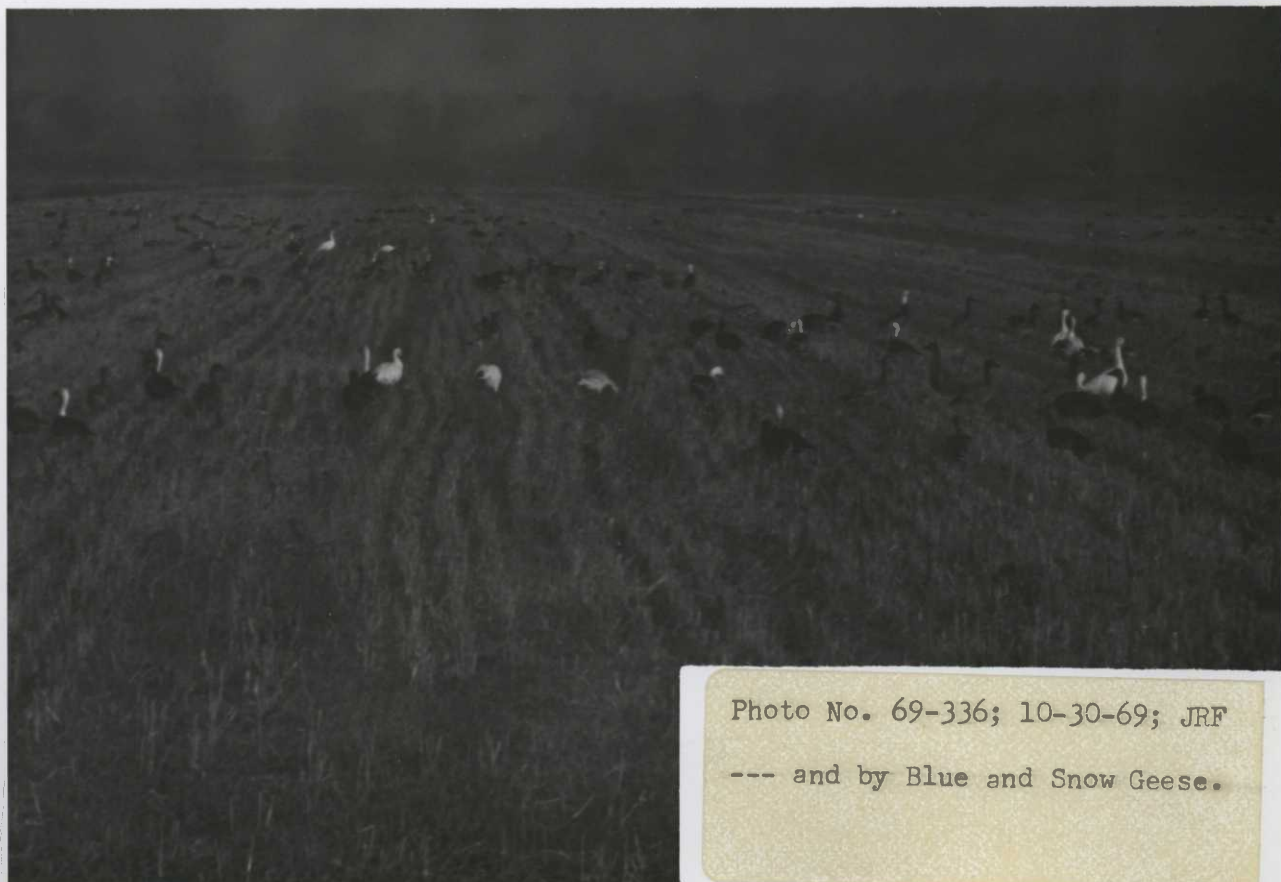


Photo No. 69-336; 10-30-69; JRF

--- and by Blue and Snow Geese.



Photo No. 69-299; 10-10-69; JRF
69-300; 10-10-69; JRF

Geese moved into sugar beets as soon as the tops were shredded.



Photo No. 69-313; 10-29-69; JRF

Sugar beets left in the ground
were soon eaten down to ground
level.

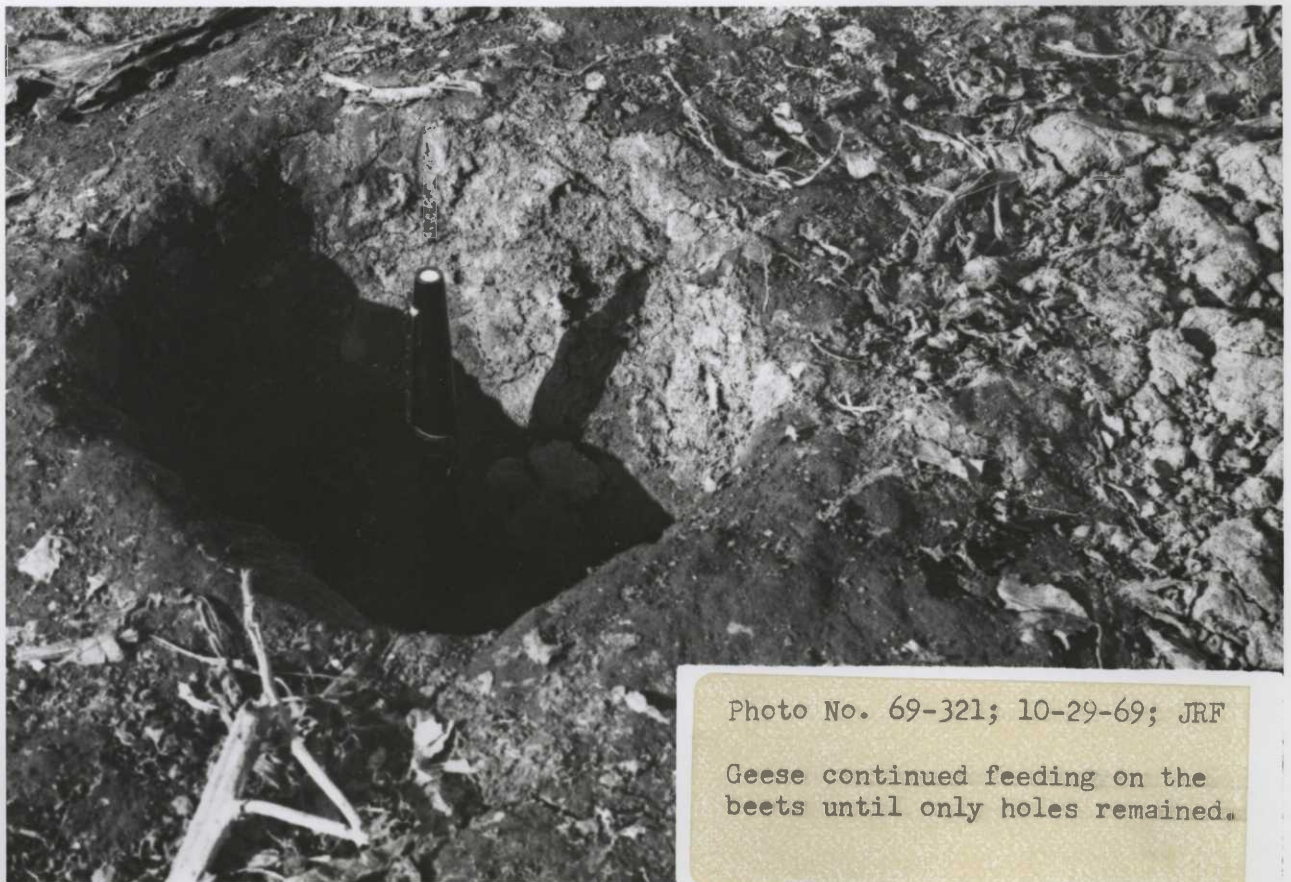


Photo No. 69-321; 10-29-69; JRF

Geese continued feeding on the
beets until only holes remained.



Photo No. 69-319; 10-29-69; JRF

Refuge share of sugar beets left
in the ground - before



Photo No. 69-320; 10-29-69; JRF

Refuge share of sugar beets left
in the ground - AFTER

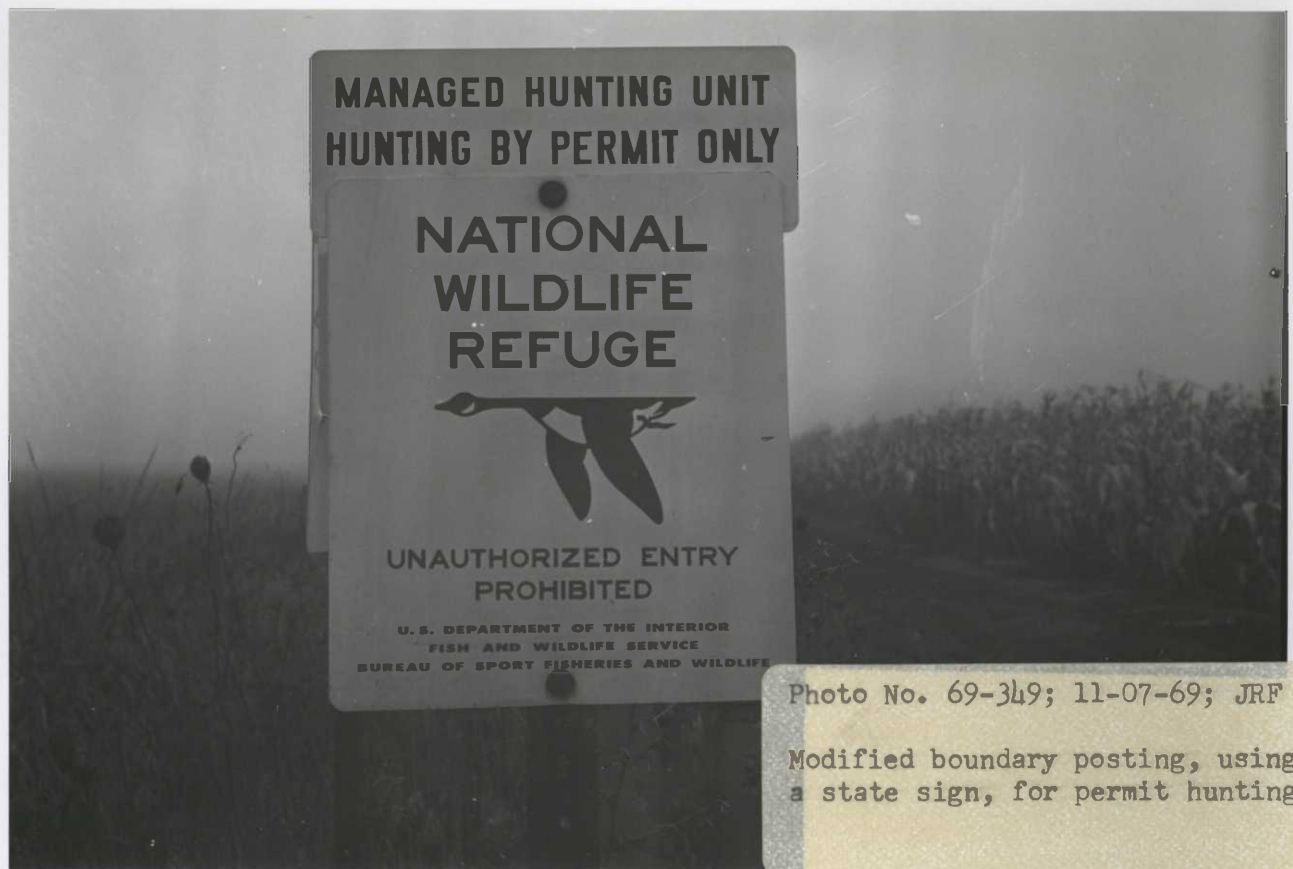


Photo No. 69-349; 11-07-69; JRF
Modified boundary posting, using a state sign, for permit hunting

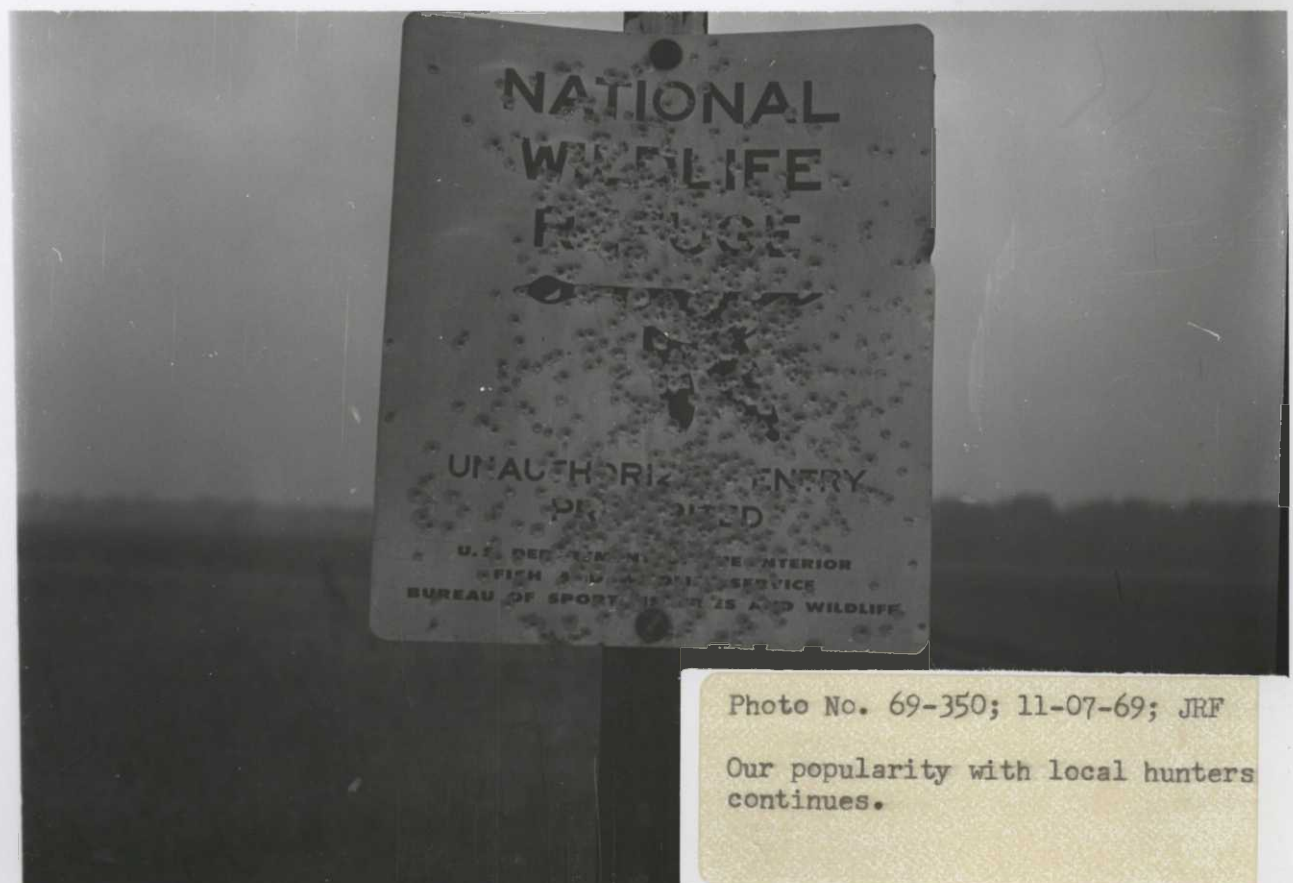


Photo No. 69-350; 11-07-69; JRF
Our popularity with local hunters continues.

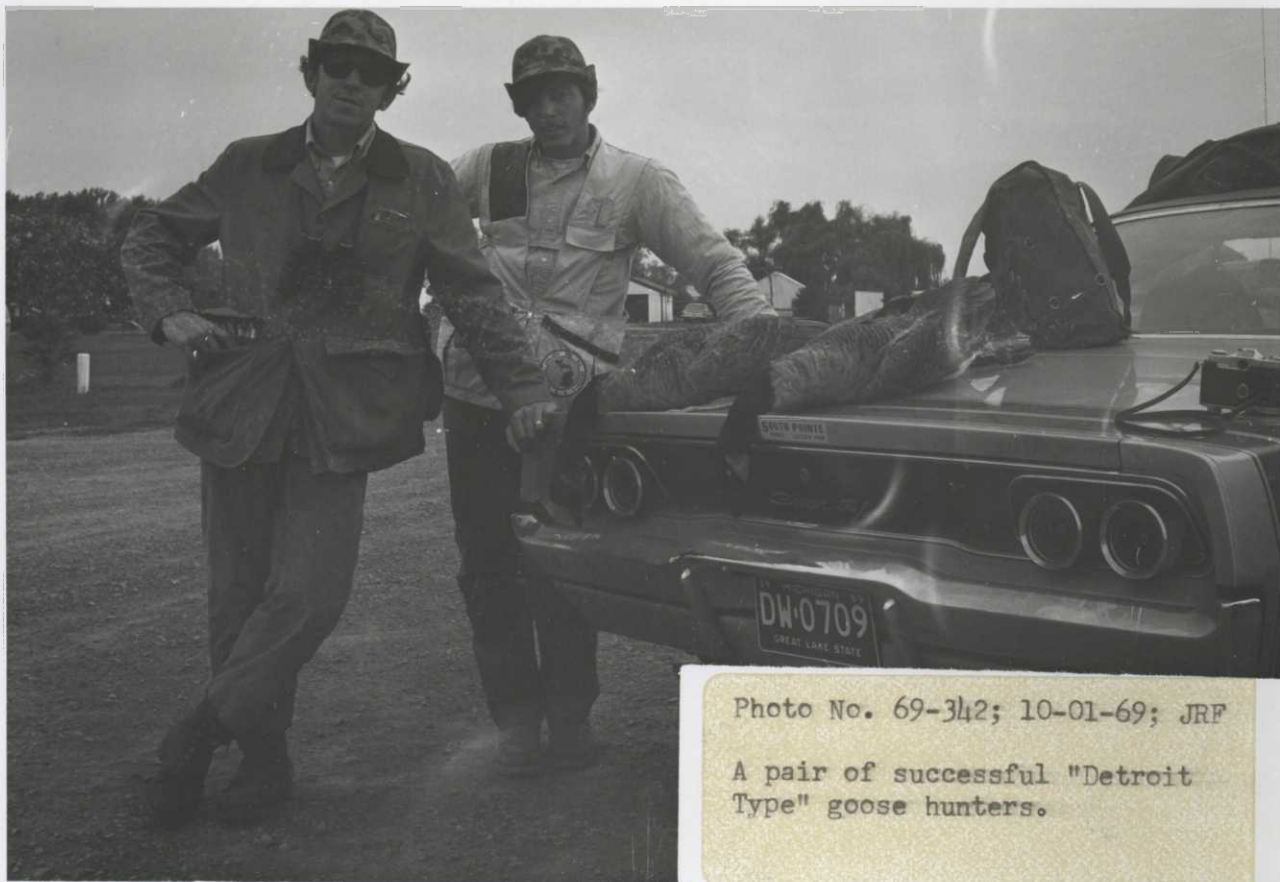


Photo No. 69-342; 10-01-69; JRF

A pair of successful "Detroit Type" goose hunters.

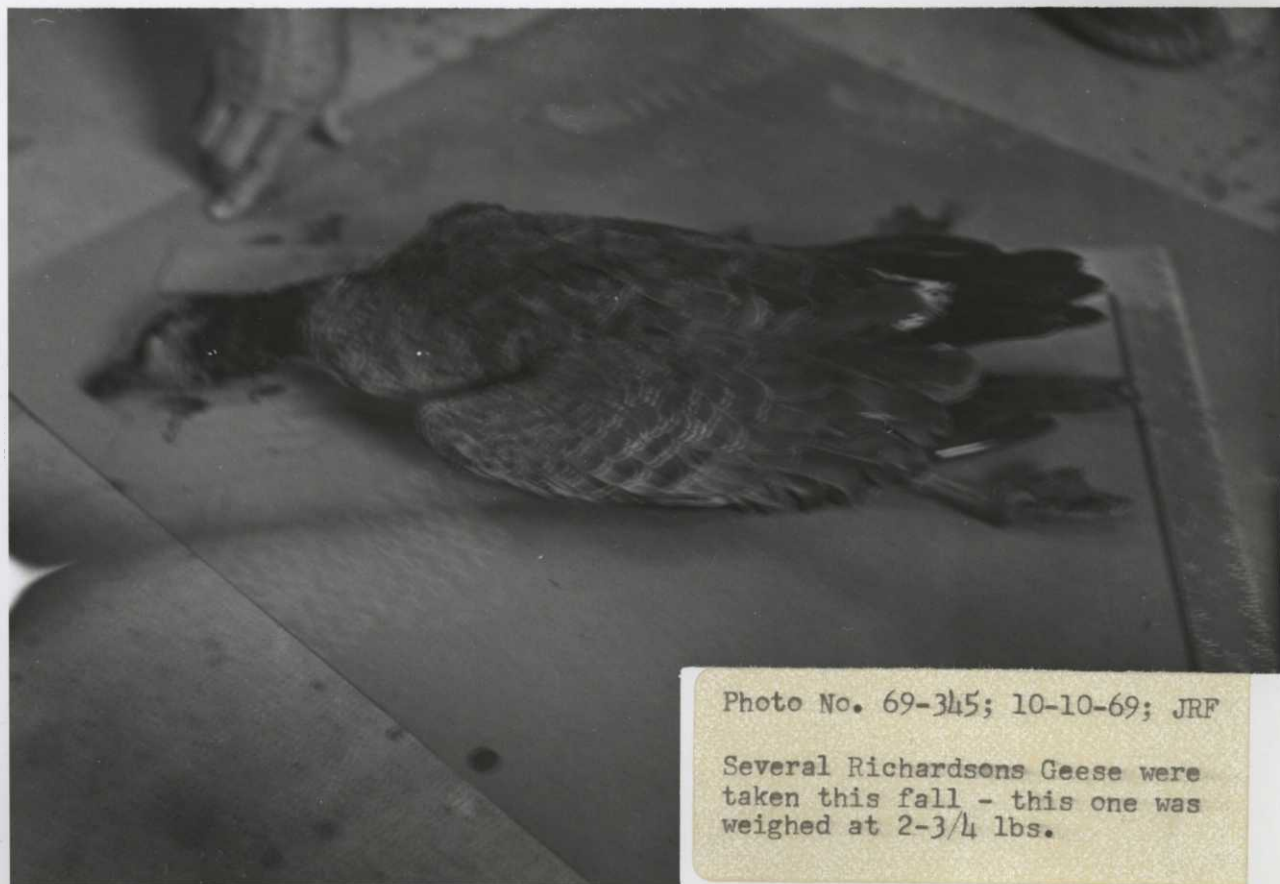


Photo No. 69-345; 10-10-69; JRF

Several Richardsons Geese were taken this fall - this one was weighed at 2-3/4 lbs.

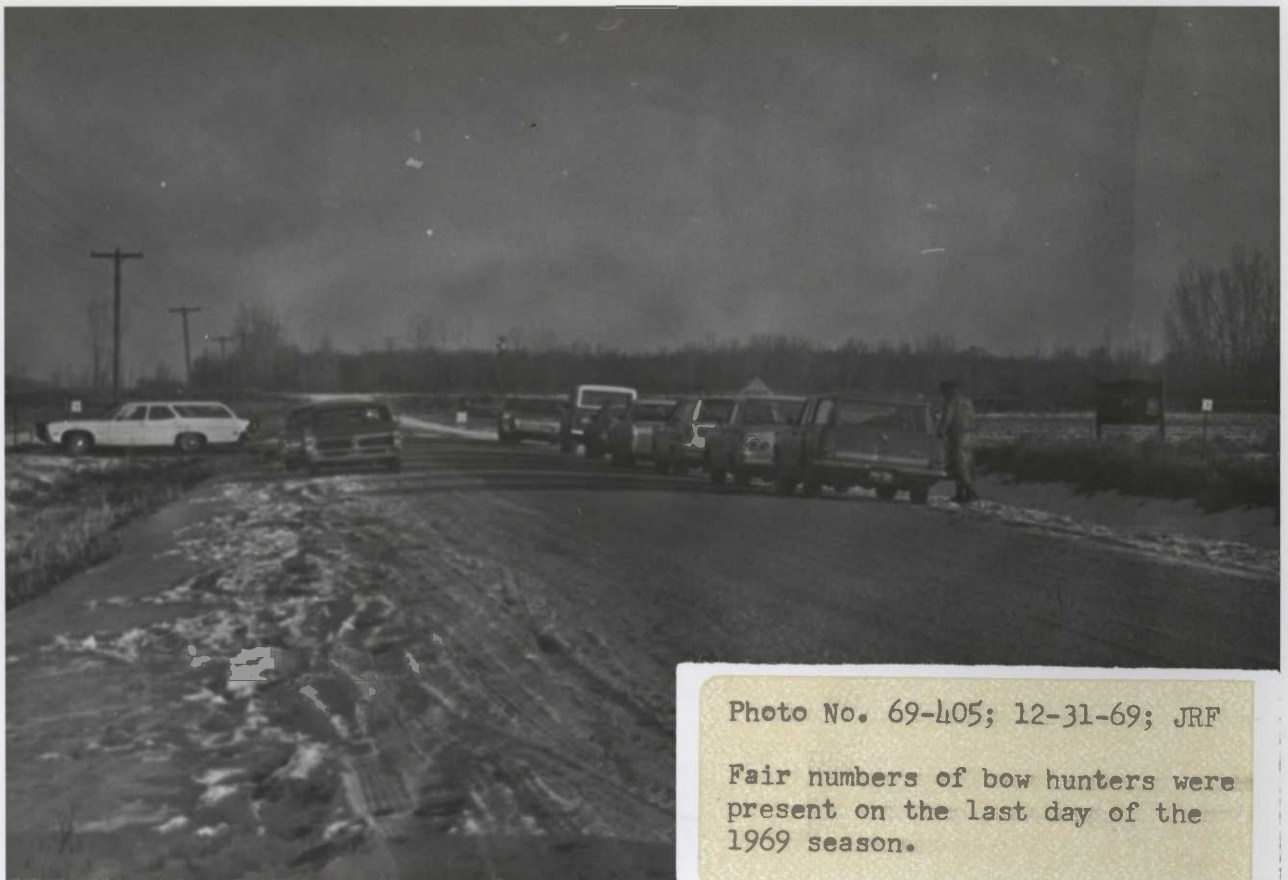


Photo No. 69-405; 12-31-69; JRF

Fair numbers of bow hunters were present on the last day of the 1969 season.



Photo No. 69-383; 12-01-69; JRF

The best buck speared by bow hunters in 1969.



Photo No. 69-379; 11-23-69; JRF

THE END